

Railway Age

Founded in 1856



In addition to the Century, pictured here, the Southwestern and the Knickerbocker, on the New York-St. Louis run, are both General Motors Diesel powered between Harmon, N. Y. and Mattoon, Ill. Each day, these two trains run 1,020 miles in each direction behind General Motors Diesels.

The "CENTURY" passes its Millionth Mile behind General Motors Diesel power

FOR nearly two years the 20th Century Limited, of the New York Central System, one of the best-known name trains in the world, and the only extra-fare train between New York and Chicago, has been pulled between Harmon, N. Y. and Chicago, Ill. by General Motors locomotives. Covering the 929-mile span each way each day, the 20th Century has rolled up more

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Behind General Motors Diesel locomotives, each 16-car Century train maintains its 16-hour schedule between America's two greatest cities with plenty of reserve and with a remarkable on-time record

through all kinds of weather.

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Railway Age

With which are incorporated the Railway Review, the Railway Gazette, and the Railway Age-Gazette. Name registered in U. S. Patent Office.

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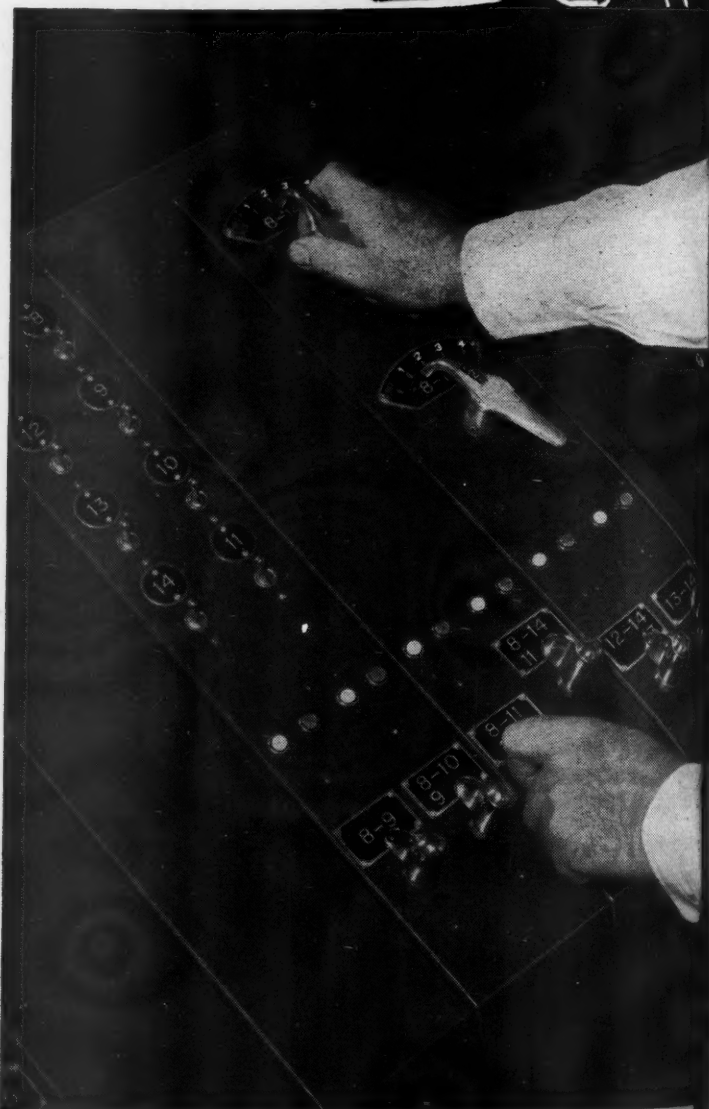
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RAILWAY AGE

Freight Cars Can't Be Built Without Steel

The inability of the railroads to supply enough freight cars to shippers—which is growing steadily worse and constitutes a brake of increasing seriousness on the maintenance and increase of national production—is due to the fact that the number of cars in existence is declining when it should be increasing, and this, in turn, is due to a single cause—namely, an inadequate supply of steel. Steel is a basic raw material which is an ingredient of almost all production, but transportation is also a raw material which is just as fundamental as steel. The steel supply itself—short as it is—will become much shorter if insufficient cars are available to haul the coal and ore needed in steel manufacture, and in the delivery of steel products to their purchasers.

How Many Cars Are Needed?

The railroads had a maximum shortage of 42,141 cars during the peak of traffic in the fall of 1946. The ratio of cars on line to cars loaded weekly at that time was 2.1. Thus the railroads would have needed, theoretically, 88,000 cars more than they had to have avoided shortage in 1946. A minimum of about 30,000 cars has to be scrapped in a year—so approximately 120,000 cars need to be built in 1947, merely to eliminate acute shortages. Actually, a surplus of about 60,000 cars over total requirements is necessary, as a practical matter, to eliminate all shortages. There ought really to be, therefore, a program for the construction of 180,000 cars in 1947—to meet all the requirements of traffic.

Against this need for additional cars, there were built in 1946 only 41,955 cars—while, of necessity, the Class I railroads alone had to retire almost 80,000 cars during the year. Of the cars retired 29,000 were actually destroyed or dismantled. The Class I railroads ended the year 1946 with an ownership of 1,740,000 freight cars, which was 20,000 fewer than they had owned at the beginning of the year. Freight car ownership by Class I railroads declined also in 1945, being 10,000 less at the end of the year than at the beginning.

Not only are insufficient freight cars being built, but the current supply of materials is inadequate to keep at a minimum the number of cars out of service awaiting repairs. At the end of 1946, the number of railroad-owned cars awaiting repairs was 4 per cent of

the total. If materials had been available to have reduced this ratio to the 2.8 per cent level attained in the war year 1944, the railroads would have had 20,000 more cars for use by shippers than they were actually able to supply.

At 17.9 tons of steel per car (not including castings averaging 3.65 tons per car), the 41,955 cars built in 1946 represented a total of 751,000 tons. If the railroads are to secure their minimum requirement of 120,000 new cars this year, 2,148,000 tons of steel will be needed for this purpose, which would be 1,397,000 more tons than were supplied in 1946. Before the war, when there were ample cars available, the railroads were scrapping older cars at the rate of upwards of 75,000 a year—or about twice as fast as new cars are now being built and more than twice the rate at which old equipment has been junked since the beginning of the war. A program of 120,000 new freight cars this year, large as that seems in relation to 1946 production, would still not be enough to contribute anything to a margin of safety in the car supply nor toward reducing the average age of car equipment. It would just enable the railroads to scrape by without serious shortages, and that is all.

But even this modest goal is fantastically high, unless much more steel is forthcoming soon. In January the supply of materials was such that only 2,982 freight cars were produced—which is at the rate of less than 30 per cent of the number required if the worst of the car shortage is to be eliminated.

Maintenance Requirements Not Met

The railroads have estimated that they, and the suppliers of car parts, will need 1,872,000 tons of steel during 1947 to maintain their freight cars in a satisfactory state of repair, but the steel industry has accepted orders for repair material at the rate of only two-thirds of requirements and deliveries have fallen short even of this insufficient amount.

The publication *Iron Age* reports total sales of steel to the railroads in 1946 at 4,300,000 tons, and shows the tonnage of rails, wheels, axles and tie plates as 3,012,000—leaving a difference of 1,288,000 tons for all other railroad uses. This figure also includes structural steel for railroad use, which could not have been

much less than 100,000 tons. By this process of elimination it appears that the railroads were able to obtain from the steel industry, last year, only about 1,200,000 tons of steel for their entire equipment program—maintenance as well as new construction. Figures given above indicate that, for proper maintenance of existing cars and the construction of 120,000 new cars, about 4,000,000 tons would be needed, or more than three times as much as the steel for equipment made available to the railroads last year. Moreover, this figure of 4,000,000 tons includes no allowance for the construction and repair of locomotives and passenger cars.

It is, of course, not alone in the construction and repair of equipment, especially freight cars, where adequate railroad service is being hampered by lack of steel—although that is the place where the dearth is most acutely felt. Ever since the beginning of the war rail renewals have failed to keep pace with the increased wear on track occasioned by heavy traffic.

As of the end of January, the car builders and railroad shops had orders for 75,578 freight cars on their books. This is not as many cars, to be sure, as are needed—but the railroads may be pardoned for not placing orders in the full number required, when they have no assurance that they will get the cars before the demand for them has subsided. In January alone, 9,905 cars were ordered—which was $3\frac{1}{3}$ times as many cars as were produced in that month.

War-time Allotment Rate Persists

Government priority orders cannot be blamed for the inadequacy of the supply of steel to the railroads, since official priorities are currently issued only to protect the emergency housing program and for a few overseas requirements. The government *could* issue priority orders under the President's emergency powers, but it has not done so, preferring to rely on the process of "voluntary set-asides" by the industry itself. Moreover, the President's emergency powers, unless extended, will expire March 31.

Computations from figures compiled by Iron Age indicate total steel production and the proportion of it delivered to the railroads as follows:

Years	Avg. Annual Production (Thousands of Net Tons)	Avg. Annual Deliveries to R.R.s (Thousands of Net Tons)	% R.R.s to Total
1925-28	39,039	7,788	20
1929-32	28,058	4,403	16
1933-36	26,172	2,515	10
1937-40	38,102	3,350	9
1941-44	63,490	5,422	9
1945	56,946	5,268	9
1946	46,868	4,300	9

Since the amount of steel received now by the railroads is controlled by the policy of "voluntary set-asides," it is apparent from the foregoing figures that the proportion of total steel production allocated to the railroads is being governed by the proportion allotted to them during the war years, when the bulk of steel production was devoted to the war effort. Actually, the necessities of the country as regards expansion of capacity are even more acute today than they were in the period of the 1920's when the railroads were getting nearly 8,000,000 tons of steel annually and were consuming in the neighborhood of 20 per cent of all steel produced.

Whether the policy of restricting the railroads' sup-

ply of steel and thus railroad capacity to move freight is the result of concerted action by the steel industry as a whole, we have no way of knowing. There is evidence, however, to show that some of the producers are a great deal more interested in the railroad market for their products, both present and future, than others. Under the circumstances, it would appear that such companies must be deeply concerned over existing conditions. They must know—whether the others do or not—that there is nothing so dangerous to the railroads' position in public esteem as inability to supply transportation service when it is required. It is to such companies that the railroads must look for leadership in an effort to correct the serious situation which confronts them.

The railroads are handicapped in demanding, rather than merely requesting, more considerate treatment from the steel industry by the fact that the steel industry is one of the railroad industry's largest and most valued customers. Nevertheless, the danger of offense to one big customer is less than that of offending all their other customers. Of all the tremendous tonnage of steel freed for civilian use when war production ceased, the railroads have received not one pound. Indeed, as the table shows, they got a million tons less steel in 1946 than their average during the war years. Meantime, the truck manufacturers are boasting that 1946 was a "record" year for civilian truck production; and 1946 was a "record" year also for heavy-duty highway trailers, which are particularly competitive with the railroads. The railroads' competitors, in other words, are getting more steel than they ever did before.

Economies Available in More and Better Welding

Improved welding equipment and methods in railway repair and reclamation work, as well as new construction, have practically revolutionized railway shop practice and effected gratifying economies. For example, it was reported at the last annual meeting of the Locomotive Maintenance Officers' Association in Chicago that one large midwestern railroad with a total ownership of 157 welding machines saved \$360,000 in one year by reclaiming parts formerly scrapped. Another road figures a net return of roughly \$3.50 for each dollar spent in electric welding and \$2.50 in gas welding. Since expenditures of a million dollars a year for welding materials and labor are by no means uncommon on individual railroads, the magnitude of potential economies is apparent.

Several fundamental considerations need attention to secure maximum benefit from modern welding procedures. Welding machines and equipment must be provided which take advantage of the latest improvements in the art. Shielded-arc welding, for example, prevents the formation of undesirable oxides and nitrides. Improved gas-welding technique is available. Atomic-hydrogen welding also may be useful in some situations. Welding positioners of various types which enable locomotive and car parts to be quickly and easily adjusted to the position required for most effi-

cient welding are a great help. Pyrometer-controlled preheating and normalizing furnaces are essential for the most satisfactory results. Other necessary detailed equipment includes such things as welders' protective hoods, goggles and gloves.

From a personnel standpoint, the primary requirement is an adequate force of competent welders, the development of which involves a long-time program of preliminary instruction, shop training, periodic checking of test welds and special training in difficult welding procedures. At any of the larger shop repair and reclamation points, an experienced welding foreman or instructor will earn his salary many times over, both in securing improved workmanship and in knowing when repairs by welding should be attempted and when not.

A vital consideration in any satisfactory weld is the preparatory work, including shaping of the surfaces to be welded and also thoroughly cleaning them, since good welds cannot be made on dirty metal. Cleaning methods include sandblasting, shot blasting, burning and the use of chemical solutions. Each of these has its own merits and limitations for particular jobs. For gas welding a suitable flux is required for satisfactory results.

Careful preheating to desired temperatures and also subsequent heat treatment or stress relief after welding are in many instances absolutely essential for the making of full-strength welds which will stand up under severe service conditions. For relatively small parts which are being welded in quantities, the car-bottom furnace with automatic temperature control effects substantial time and labor savings.

Thorough study and careful planning are therefore essential to insure the best use and maximum savings from welding equipment. This is particularly true in railroad repair work with the great variety of jobs to which welding can be applied. The observance of the rules of practice and effective planning, in turn, depend upon the selection of a welding supervisor with the qualities of leadership which are required to insure the maintenance of high standards of welding performance and who is always looking for more jobs to which welding can be applied effectively.

Army-Railroad Research

There has been talk by some Army general officers about military "auto-bahns" the length and breadth of the country to handle *all* the transport needs of the Army for personnel and materiel by highway vehicles and favoring the provision of enough big planes to move all Army units and their supplies by air. Despite such chatter, the elements of the War Department which have the basic responsibility for getting the Army and its freight moved take the view that the railroads will play a big part in future military transportation. The Transportation Corps is carrying on an extensive program of research with all types of rolling stock with a view to developing and improving it for military purposes.

With regard to railroad matters, the major job of the Corps' research and development division is to devise the best possible rolling stock and roadway practices

and machinery for use by military railroaders in the combat zones and "zones of communications." Naturally, the specifications therefor show a wide divergence from domestic commercial practice, since the equipment is to be used under combat conditions and—we hope—on foreign soil. The Army wants, for example, a light locomotive that can be transported to its field of operation by plane.

It is in the development of equipment for use in what the Army calls the "zone of the interior" (i. e.—such of the United States as is not involved in enemy action) that the greatest field exists for joint action between the armed forces, the commercial railroads and railway supply companies. On the one hand, the Army desires that the railroads have ready the type, quantity and quality of equipment and roadway that will carry its freight and personnel effectively. It is concerned, for example, about the design of flat cars which would carry the tanks of the armored force. It is worried about restricted clearances which force time-consuming detours for big munitions shipments. On the other hand, the Army seeks cooperation in the design of specialized equipment which would be necessary in time of war. To illustrate: it is looking toward a light locomotive that will perform with equal satisfaction on the road and in the yard. It sees a need for greater standardization of rolling stock, so that parts would be more readily interchangeable.

In World War II, the government acquired some 2,400 troop sleeping cars and 400 kitchen cars which were rented to the railroads for troop train service. The design of these cars was carefully worked out by the Army, the Navy and the carriers before production started. The "pilot model" for the sleeping car was built and placed in service by the Pennsylvania late in 1942, and exhaustive tests in all possible types of service were weighed before production on the first order for 1,200 was put under way. The Army does not require this troop-carrying fleet in peace-time and the cars have been put up for sale, but there should be continued cooperative development so that an efficient design will be ready the minute mobilization is announced.

The Army also has need for a large number of locomotives to service its posts, warehouses, air fields and training grounds. It owns a fleet of 3,645 tank cars, many of which are highly specialized for carrying chemical components. (Two of them are designed to carry helium gas.) The Army also owns 16 flat cars for calcium carbide containers.

The trend in implements of war is such that the transport needs of the Army grow more and more distinct from those of commercial shippers. In the Civil War, any old freight car would do for men and their weapons. Today's fighting force needs a bewildering variety of special units for ammunition and components; for over-size and over-weight shipments; for fast loading of impedimenta (the equipment which accompanies Army units); and for the feeding and transport of troops over long distances. The Army, the carriers and the builders must see to it that the most effective equipment for these jobs is tested and ready for production when the need arises. Of this task, General Paul F. Yount, Army's assistant chief of transportation, declared in a recent speech: "The . . . problem is not complicated, but one which bears patient and constant research."

Railroad Modernizes Its "Front Door"

North Western uses latest innovations in design, materials and furnishings to equip its "uptown" ticket office in Milwaukee, Wis.

REALIZING that a modern city ticket office can actually be its "front door" and serve the same function in selling transportation as the store window does in selling merchandise, the Chicago & North Western applied some of the technique of smart window display to its recently-opened ticket office in Milwaukee, Wis. Yet, while taking full advantage of eye appeal in the design adopted, it did not overlook basic functional features in this facility, and incorporated not only many conveniences for the public and its own personnel, but also combined its freight solicitation office with the city ticket office in one building, so as to be able to serve both its shippers and passengers in one convenient central location.

The new offices are located on the first two floors of the Caswell building, which is a flatiron-shaped structure at the diagonal intersection of West Wisconsin and North Plankinton avenues. The ticket office occupies an L-shaped area formerly tenanted by two stores at street level, which were combined and modified to place entrances on both avenues. The freight office occupies an equal area on the second floor, to which access is afforded by a private circular stairway from the ticket office and also by the elevators of the building.

The alteration work included the removal of two walls; the complete reconstruction of the two street fronts; the installation of new flooring and ceilings; the construction of a stairway between the two floor levels and of several partitions to form private offices; the installation of new lighting facilities throughout; the building and placing of special counters, desks, settees, movable furniture, and advertising displays; and the complete redecoration of the premises in a harmonious color scheme. Radiators are of the concealed-convector type.

Attracting Attention

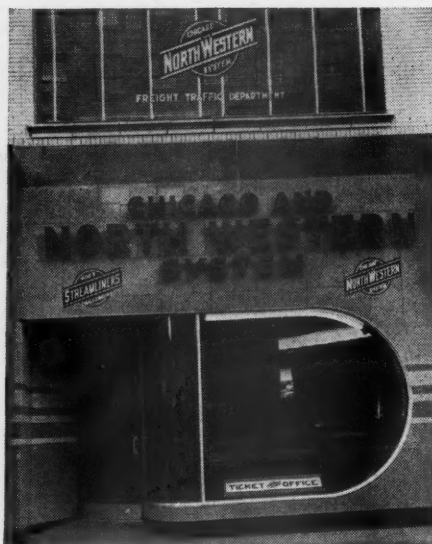
An adoption of successful merchandising practice, an illuminated advertising sign, placed at the second-floor level where it can be seen from both avenues, first attracts the eye. Also, the name of the railroad is shown in large porcelain enamel letters on each street front, above plate glass windows, and back-lighted for night illumination. The windows are of peach-tinted glass, curved at the entry end on each avenue

and cut semi-circular at the run-out ends for artistic treatment. For further eye appeal, both street fronts are faced with Vitrolite, in alternate horizontal bands of the North Western's green and yellow, while the floors and ceilings of the entries are surfaced with red non-slip tile and peach mirror Flexglass, respectively.

Since it was obviously impracticable for the railroad to attempt to display its locomotives or cars through its office-window fronts as stores display their merchandise, the design was planned to draw the attention of the passing public toward the open ticket counter within the building. This was achieved by the streamlined design of the window fronts themselves, and by large circular mirrors on the walls of the office, placed at the proper angle of reflection to show the ticket counter, which was made unusually attractive by colored illuminated transparencies recessed into the face of the counter front near its top.

The Ticket Office

The portion of the L-shaped ticket office that faces Wisconsin avenue is approximately 20 ft. wide and 53 ft. long, and that which fronts on North Plankinton avenue is about 16 ft. wide



The technique of smart window display was applied to the exterior and entrances to the North Western's "front door" at Milwaukee

and 24 ft. long. These areas as a whole contain public seating facilities, an S-shaped open ticket counter, a telephone switchboard, a private office for the city ticket agent, a tours desk, desks and a counter for two city agents, a wash-and-cloak room, and the circular stairway to the second floor office.

Wide Use of Colors

One of the striking features of the new ticket office is the effective use made of color for decorative purposes, with the general motif in beige, blue and gray, combined with a yellow ceiling. The floor, which is of Marblette, is tan, except for a blue walking strip that curves from one door, to and around the counter, to the other door. This color scheme is also extended to the walls, but with some variation.

The decorative effect is further enhanced by colorful leather-upholstered settees, one of which is built in the wall opposite the ticket counter. A double row of ten peach-colored mirrors, separated only by V-shaped grooves, is located on the wall behind the built-in settee, and not only adds to the color scheme but also gives an impression of greater depth to the room.

A former 16-ft. ceiling height that existed in the first-floor area was reduced to 11 ft. by means of a suspended ceiling, and indirect cove lighting, employing fluorescent lights, was installed.

The Ticket Counter

The S-shaped open ticket counter was specially fabricated to the railroad's specifications to serve a three-fold purpose. First, it brings the public into intimate contact with the railroad personnel and creates an informal, friendly atmosphere. Second, it houses from public view all of the necessary equipment needed for the transaction of ticket sales and promotes a desire for cleanliness and orderliness on the part of the employees. And third, by means of a series of 15 counter-top, cabinet-housed colored transparencies, illuminated by concealed fluorescent lights, it serves to advertise the streamlined trains and points of interest on the road.

The counter is faced with light walnut paneling and is topped with a beige Carrara glass surface. The cabinets that house the transparencies and their lights

are set along the top of the public's side of the counter, with gaps between them at intervals for serving the public at the more natural counter height. Here again the color motif of the whole has been carried out by a blue Vitrolite deal plate at each of the sales areas between transparencies. A Lucite guard rail around the front of the counter adds to the decorative effect.

A large number of drawers and compartments of various sizes are built into the rear of the counter, each designed for a specific purpose, including space for local and interline tickets, rubber stamps, cash in bills and change, folders, pens and pencils, letter filing, and even for wastepaper, thus making orderly segregation of the numerous items a relatively easy matter.

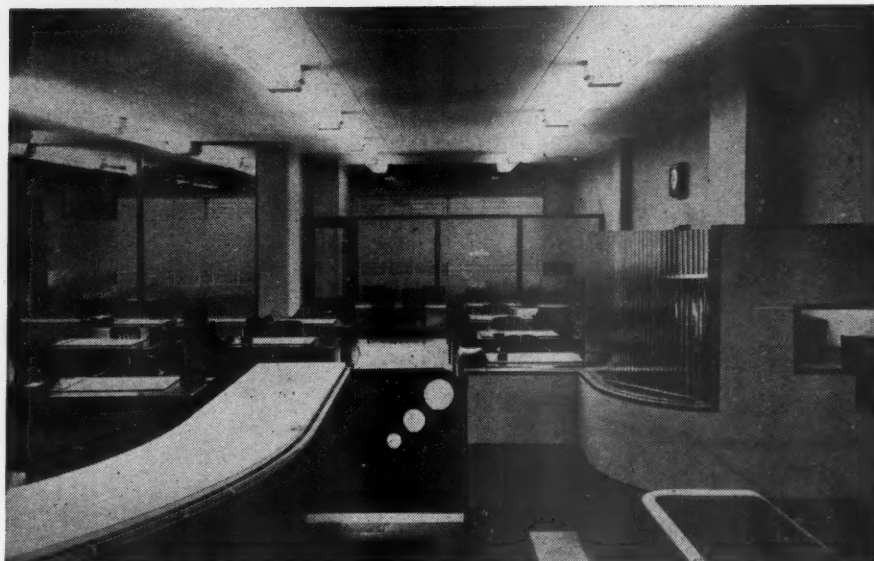
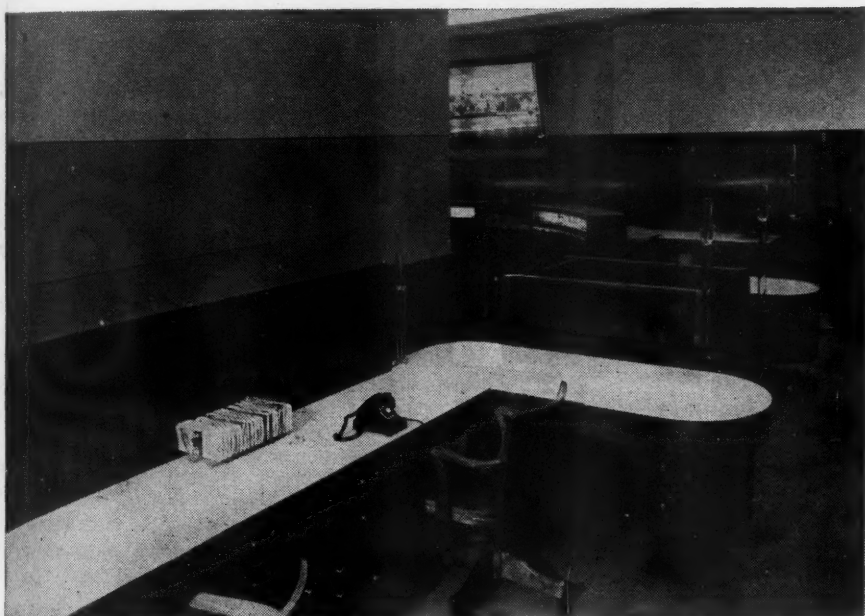
Other features of the ticket office include wide, leather-upholstered built-in



Above—The artistic architectural treatment of the North Western's uptown ticket office in Milwaukee, Wis., is exemplified by the sweeping lines of the counter

Left—Built-in, leather-covered settees are provided for patrons wishing to discuss detailed travel arrangements

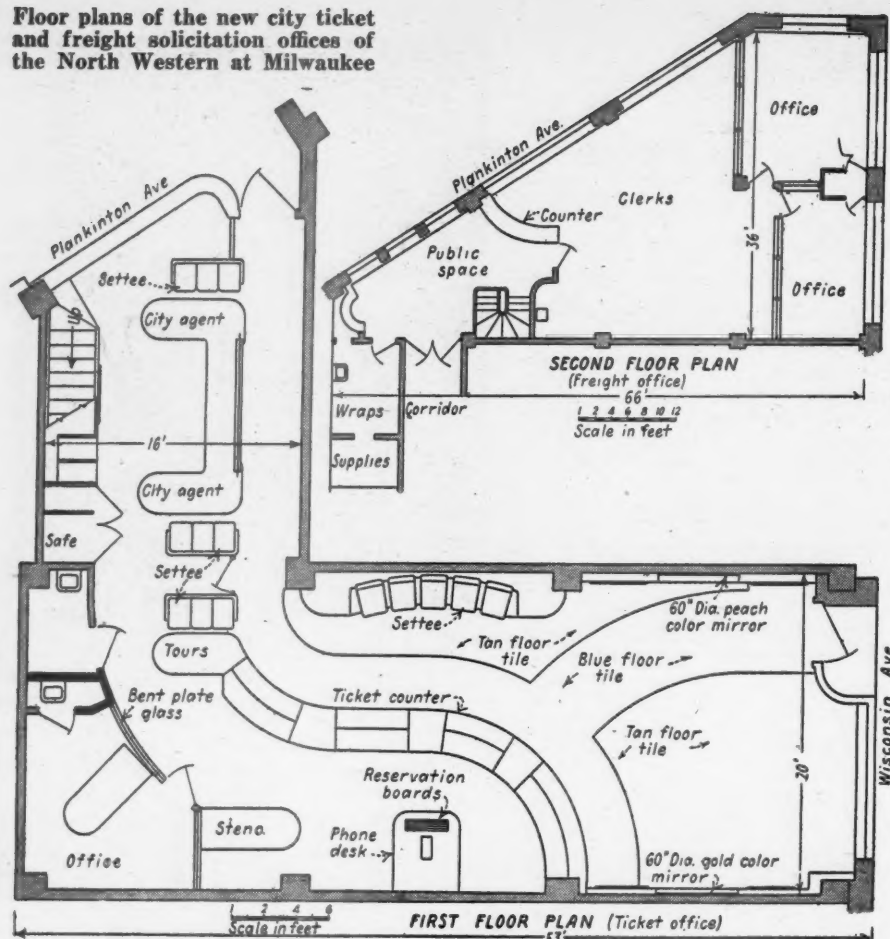
Below—View of North Western's new freight office in Milwaukee, located on the second floor



seats opposite desks of the tours representative and the two city agents. The desks, too, are colorful and modern in a design that makes use of curved lines, walnut paneling, plate glass and Lucite. A desk for a stenographer and one for a telephone switchboard are of similar construction, the switchboard on the latter being built horizontally into the desk top. All desks have Carrara or Vitrolite tops.

Another unusual plan is that introduced for the handling of car diagrams or space cards, which provides 24 pockets in one end of the switchboard desk. Here, the diagram cards are fastened to boards of walnut and Lucite, which project about 2½ in. above the desk top where the pertinent train information may be seen at a glance.

Floor plans of the new city ticket and freight solicitation offices of the North Western at Milwaukee



Letter files, stationery supply shelves, a safe, and a cloak room are all recessed in the wall under the stairway, which is faced with flush walnut paneling to harmonize with the general architectural scheme.

Other innovations include a large illuminated transparency dominating the wall behind the ticket counter and showing Milwaukee's lake front in natural colors; a circular walnut table supported on Lucite legs; two circular, tinted mirrors, five feet in diameter; and transparent Lucite costumers. A large clock of unusual design, which shows the twelve NORTH WESTERN letters instead of the customary hour numbers, has been ordered but has not yet been installed.

The Freight Office

The freight office area on the second floor is located in the flatiron corner of the building. The general dimensions of the triangular portion are 50 ft. by 36 ft. by 60 ft., and of an abutting rectangular portion, about 36 ft. by 16 ft. The portion representing the apex of the triangular area contains the space set aside for the public, and includes the top landing of the stairway, the entrance from the building corridor, and a seating space. It also includes a curved business counter, with a swinging gate of modernistic design, which segregates the

public portion from space for the clerks. Two private offices, formed by plate glass partitions, occupy the rectangular portion, and an area between these offices and the public's space is utilized by clerks and stenographers.

The color motif within the freight office is peacock and Caribbean blue, with Swedish red trim, and to harmonize the floor is surfaced with asphalt Moul-tite—blue-gray in the public's space and light blue and tan in the working area. The entire ceiling is surfaced with a 1½-in. Celotex acoustical tile finished in canary yellow, on which four banks of cold-cathode tubes, each with four tubes, are mounted for illumination purposes. The walls are painted peacock blue and the larger windows are fitted with Venetian blinds.

The curved business counter is of light walnut with a white Formica top, two feet wide, and contains numerous drawers and shelves for rate books and other necessary business materials. Here, too, all desks are of light walnut and of modern design. New Formica window sills have been extended inwardly to form window seats, and also to permit the concealment of heating convectors.

Further Decorative Treatment

Artistic treatment also was applied to the freight office, particularly in the space used by the public. Aluminum,

stainless steel and Marblette are used in the construction of the circular stairway balustrade, stringers, risers, and non-slip treads, and serve to brighten its appearance. Bent Flutex glass is used at the top landing around an office electric drinking fountain, and access from the building corridor to the public space is through double doors of modern Tuf-flex tempered plate glass. A large illuminated and curved transparency, showing a North Western Diesel-powered fast freight train, rounds out the narrower end of the public space.

Three of the second floor windows contain the animated neon advertising sign previously mentioned. This sign gives the illusion of a "400" streamliner in motion, with wheels turning, oscillating Mars headlight, and flashing "400" numerals.

The alterations and design employed in the new uptown ticket office were planned under the general direction of E. C. Vandenberg, chief engineer, and were carried out under the direct supervision of M. A. Wright of the railway's engineering department. All of the work was done under contract.

Among the several products mentioned in this article, Vitrolite, Flutex and Tuf-flex are manufactured by the Libby-Owens-Ford Glass Company, Toledo, Ohio; Carrara glass is produced by the Pittsburgh Plate Glass Company, Pittsburgh, Pa.; Formica by the Formica Insulation Company, Cincinnati, Ohio; Lucite by E. I. du Pont de Nemours & Co., Arlington, N. J.; Marblette by the Marblette Corporation, Long Island City, N. Y.; Celotex by the Celotex Corporation, Chicago; Moul-tite by the Thomas Moulding Floor Manufacturing Company, Chicago; and Flexglass by the U. S. Plywood Corporation, New York.

A STUDY IN CAUSE AND EFFECT



THE CAUSE THE EFFECT

FIRST: Visualize the Result of the Unsafe Act.
SECOND: Face the Direction of Movement.

The February installment (Poster No. 281) of the "All the Year-Every Year Safety Program" of the A. A. R.

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Fares, Tickets and Commissions for Volume Rail Travel

By **STANLEY BERGE***
Associate Professor of Transportation
Northwestern University



THERE are two ways of looking at the transportation business, i. e., from the standpoint (1) of its problems or (2) of its opportunities. As a university teacher of transportation, I find that my students are interested more in *constructive opportunities* than in problems. To provide for students of passenger transportation the kind of instruction they are seeking, I have to spend considerable time with railroad officers, always in the quest for the positive suggestions they may have for improved traffic and earnings.

Lately it has been very encouraging to hear railroaders venturing optimistic opinions with regard to the passenger revenue outlook. There will, of course, be increasing competition from other means of travel, but there appears to be a definite prospect for profitable operation by the railroads in the *long-haul mass transportation market*, after utilizing new technical developments and improved management methods.

Four trends are apparent in the current thinking of railroad people I have consulted respecting constructive opportunities just over the horizon:

(1) Railroads now possess new unexplored mass transportation technical efficiency which can be profitably exploited by low excursion fares.

(2) Fares, tickets and accounting procedures at present are unnecessarily complicated. Their simplification will not only please the traveler but will save money for the railroads.

(3) Modern fluid-drive rail-motor cars can be used to a greater extent in the replacement of obsolete equipment to eliminate or reduce deficits on branch lines and on other light-traffic passenger operations.

(4) Sentiment for effective merchandising tends to favor the extension of commission arrangements with travel agents to expand the wholesale and retail brokerage of mass rail travel, in addition to all-expense tours.

Few people have ever considered the basic mass transportation economy of the railroad passenger train. To date no other form of inland transportation has achieved anything like the efficiency of railroad transportation of passengers. The railroad passenger train is unique by virtue of its tremendous capacity for mass transportation at low cost.

Half-Cent-a-Mile Excursions

Take the ratio of crew to passengers. A four-engine airplane usually carries one crew member for ten passengers at full load. A 37-passenger, intercity motor bus operates with one driver to 37 passengers. But a modern all-coach streamliner can easily provide good service with one crew member to 100 passengers.† Thus it is seen that in the single item of crew expense the railroad passenger train is far more efficient than the airplane or the motor bus.

Locomotives and lightweight passenger cars have made great technical strides in recent years. For instance, one of the new 6,000-hp. Diesel-electric locomotives, controlled by a single crew, can draw an all-coach streamlined train of 20 or more cars *with over 1,000 passengers*, at an average speed exceeding a mile a minute in level country, and can negotiate mountain grades without a helper.

Two elements enter into the cost of operating such a train: (1) *direct costs*, such as wages of crew, fuel, maintenance expense and other similar items, and (2) *overhead costs*, consisting of indirect expenses such as maintenance of track and roadbed, general administrative expense, interest on investment and similar items.‡ The direct cost of operation of an all-coach, Diesel-electric-powered streamliner, capable of carrying 1,000 passengers, need not exceed \$2 a train-mile. To cover overhead expenses we must add another \$2 a train-mile. This makes a total direct and overhead cost of only

\$4 a train-mile for a train capable of carrying 1,000 passengers under high standards of comfort.

Hence, with modern equipment, it is now possible for the railroads to make a profit on a round-trip excursion for a fare as low as a half cent a passenger-mile. With a full load, the half-cent fare would provide revenue of \$5 a train-mile—a 20 per cent net profit over all direct and overhead expenses. Anything above an 80 per cent load-factor (which would amount to four dollars a train-mile) would represent net profit on such an excursion. Experience has shown that, by advance registration, it is quite possible to achieve excursion load factors in excess of 80 per cent of capacity.

Half-cent excursion fares would represent practically the greatest travel-compelling bargain in the world. It is hardly necessary to question the success of such round-trip fares as these*:

Chicago to New York	\$10
Chicago to Denver	11
Chicago to New Orleans	10
New York to Miami	14
Los Angeles to San Francisco ...	5

Lest managements feel that half-cent fares would be injurious to total passenger revenues and the general rate structure, it is here emphasized that such low fares would need to be confined strictly to round-trip excursions, operated, let us say, on week-ends or during holiday periods, and with a guaranteed balance of traffic by virtue of the round-trip feature. The half-cent excursion fare would be confined to specific equipment on a specific schedule. The

* The Pere Marquette and Chesapeake & Ohio operated a boys' club excursion, October 15-18, 1946, for \$4 a round-trip, between Detroit, Mich., and Newport News, Va. This was a rate of *less than one-fourth of a cent a mile* for the 1,658-mi. round-trip journey. (Pere Marquette Joint Pass. Tariff Z 1535 I.C.C. 2641, issued Oct. 10, 1946.)

* The author was in charge of the Research & Development Bureau of the Illinois Central for six years, prior to service as a naval officer during World War II.

† Excluding dining car personnel.

‡ Also depreciation charges (at present averaging 7 per cent a year for streamlined passenger cars and 6 per cent a year for Diesel locomotives).

traveler would need to pay regular fare in case he were to decide not to return on the specified excursion equipment at the specified hour of departure. In this way the railroads would be free to experiment with record-breaking low excursion fares without jeopardy to their basic passenger fares, which must be kept high enough to support low-volume trains for public convenience and necessity.

For the immediate future, equipment shortages will prevent the operation of such low-fare, long-distance excursion trains. It will be some time before manufacturers can fill their present orders for new locomotives and new cars for the regular non-excursion services of the railroads. However, when available equipment catches up with passenger traffic, bringing back occasional surpluses of locomotives and coaches, it is likely that railway managements may wish to experiment with mass excursions at rates to attract mass patronage.

Successful railway passenger operations require high utilization of equipment. Half-cent excursions will help fill in the regular seasonal lows in normal passenger train traffic. They will keep trains running which otherwise would sometimes stand idle in the yards.

Simplified Fares and Tickets

In addition to new types of locomotives and streamlined cars, railroad research has discovered some interesting new methods to rid the traveler of many little annoyances with regard to fares and tickets.

There is a saying that progress is attained by (1) eliminating all unnecessary work and (2) simplifying all necessary work. Fares and tickets can now be simplified by abolishing so-called coach and first-class fares and substituting a single railroad fare, to which is added a simple series of special accommodation charges. Most travelers think, for example, that it is entirely too complicated to transfer from coach to Pullman accommodations. Under the present cumbersome system, if the coach traveler decides he would like to sleep in a Pullman, he finds he has to pay *two extra charges for one extra service*. He has already purchased a ride; all he wants is the special accommodation of the Pullman. But to buy one extra special accommodation he is forced to pay, first, an extra fare making up the difference between the coach fare and the first-class railroad fare, and, second, a fee for the use of the sleeping car. Why, asks the traveler, don't the railroads charge one extra fee for one extra service?

To illustrate the point, the coach fare from Chicago to New York is approximately \$20 one way. However, if the

traveler desires to spend approximately \$20 more for the trip he may enjoy the special accommodation and privacy of a roomette.

But this isn't the way the price sheet reads. If the traveler wants a roomette he must buy a first-class ticket for \$30 and then he may have a roomette for \$10 additional, making a total of \$40 (exclusive of federal taxes). Now the passenger is not fooled; he knows he can get a ride in a modern reclining seat railroad coach from Chicago to New York for \$20. Everything over \$20 that he pays is actually the price charged for the special accommodation of roomette service.

Instead of all this confusion about coach and first-class tickets, why not establish a single basic fare equivalent to the present coach fares and combine the present differential between coach and first-class tickets into the extra charges which are made for special accommodations? For one-way service from Chicago to New York, for instance, the basic fare at present rates would be roughly \$20. An upper berth would sell for approximately \$15 extra; a lower berth for \$17; a roomette for \$20, in addition to the basic fare.

The present complexity of fares is not consistent: Why don't the railroads charge an extra fare whenever a coach passenger walks into a dining car to purchase a meal? A modern dining car seats only about half as many passengers as a modern coach; yet the coach passenger is welcomed into the diner and pays only a single extra charge for the meal service he receives. If it is sound practice to charge the coach passenger a single extra fee when he walks into a dining car, why would it not also be sound practice to charge the coach passenger a single extra fee when he walks into a parlor or sleeping car? There would be no difference in the actual amount paid by the passenger, but it would represent a considerable simplification of fares and tickets. It would dispense with a lot of annoyance.

Railroad people have long questioned complicated fares, tickets and accounting procedures. The present complication of coach, first-class and special accommodation charges is really a device to facilitate settlement of accounts between the railroads and the Pullman Company. Now, however, with the likelihood that the railroads will take over the operation of sleeping cars, it is time to consider a better method of accounting. The single fare proposed here, with a single system of special accommodation charges, lends itself very well to modern, mechanized ticket-selling and machine accounting. Several manufacturers of business machines are awaiting a simplified fare system, at which time they will announce some remarkable innovations in high-speed ticket-vending

machines and supporting accounting machinery.

Leaving the subject of fares, let us take a look at the present-day interline ticket. This handwritten ticket may easily reach a yard long. Why not, instead, build a machine which will rapidly print interline tickets at the ticket window? The ticket would consist of a single coupon reading as follows:

ABC Railroad Company, New York City to San Diego, Cal., via Blank R. R. at Blank City, Blank R. R. at Blank City and Blank R. R. at Blank City.

That is all—with the exception of necessary spaces for the conductor of each railroad to punch as the passenger moves over his railroad and, of course, the usual contract terms and conditions. No conductor along the route would lift any portion of this simplified interline ticket and all conductors would have many less pieces of paper to count. The entire ticket could be lifted by the conductor of the destination line, if desired for accounting purposes.

This simplified interline ticket would require no important change in passenger revenue accounting. The initial railroad which collects the money would continue to make monthly settlements with the other railroads participating in the transportation of the passenger. To insure fairness in the settlement of these interline balances, a joint passenger audit bureau of the railroads would make frequent inspections, preventing any railroad from depriving another of its fair share of the interline revenue—but eliminating much of the present costly paper work in passenger revenue accounting.

Simplification of basic fares and the short-circuiting of unnecessary paper work go hand in hand. This is a job that must be done jointly by passenger traffic and accounting departments. Much progress has been made in the direction of improved mechanized accounting procedures, and the process can go much farther.

Streamlined "Puddle Jumper"

The American railroads seem to be badly in need of some economical rail-motor cars. The approximately 500 gasoline-electric cars, or "doodlebugs," running on railroad branch lines today have a modern offspring in the lightweight, streamlined car which, equipped with all the comforts of a modern reclining-seat coach, is powered by a sub-floor engine geared into the axle by a fluid drive. There are only a handful of these torque-converter rail-motor cars in operation on American railroads, but some of them have been tested more than five years under heavy war-time traffic.

The idea is simply this. First, a cost study is made of the existing service provided with standard equipment of ad-

vanced age. Second, a cost study is made of the zebra-painted, gasoline-electric "doodlebug." Third, the costs of operation of the standard steam train and of the old gas-electric vehicle are compared with those of the streamlined fluid-drive car. When this is done, it usually will be discovered that the last named—specifically designed for light traffic suburban and branch-line passenger, mail and express transportation—actually makes it possible to transform losses into profits wherever there is a reasonable amount of supporting traffic. The direct operating cost of a single-unit, fluid-drive, lightweight rail-car, with a crew of two, does not exceed 50 cents a car-mile. A two-car unit, with a crew of three, can be operated for as little as 75 cents a train-mile, with current wage scales. These costs are low in comparison with those of any other known vehicle for branch-line and non-rush-hour suburban passenger services. Further, unions have shown a willingness to cooperate with respect to crew requirements on light-traffic rail-car trains.

The application of fluid or hydromatic drive in automobiles is understood by nearly every motorist today. But the application of this same "torque conversion principle" in motor buses and railway equipment is far less understood. The advantage it possesses in lightweight rail-motor car operation over the gasoline-electric motor car is that it eliminates the cost of electric power generation. Heavy-duty "torque conversion" is not yet fully perfected, but has been sufficiently demonstrated to afford a promising field for further research. It can be coupled with the lightweight, highly-efficient Diesel engines developed for combat tanks during World War II to yield an admirable car for turning branch-line deficits into profits.

Must Operate Lines Anyhow

There are many instances throughout the United States where railroads are compelled to operate losing passenger services for public convenience and necessity. In addition, there are many more lines which must be maintained by the railroads at sufficient standards to carry heavy freight trains, yet on which passenger services have long since been abandoned. The modern, lightweight rail-motor car seems to provide the answer for such situations. It provides flexible capacity to accommodate light, fluctuating traffic. There is an engine under each car with its own fuel tank. Yet several cars may be connected and controlled electrically from the head car by one engineman. There are no dead trailer cars; each car carries its own power. Hence, power is used only in proportion to the traffic being carried, attaining flexibility somewhat comparable to that of electric railway operation, without the

investment in fixed plant which electric operation requires.

In June, 1946, the railroads took a major step forward in their efforts to merchandise passenger transportation effectively when commissions to travel agents were liberalized considerably over any previous contract arrangements. But the railroads still decline to pay travel agents commissions for the brokerage of *straight* railroad travel, exclusive of all-expense tours.

Why do the American railroads insist upon being, at once, the producers, wholesalers and retailers of passenger transportation? Is this a sound merchandising policy? What if every manufacturer of gum drops insisted on doing all of his own wholesaling and retailing? Where would General Motors, Ford or Chrysler be today if they insisted upon performing all wholesale and retail automobile marketing functions by means of their own salaried personnel? Yet the railroads entrust the entire job of marketing passenger travel (exclusive of all-expense tours) to their own salaried personnel—a great many of whom are local station agents who are required to assist in the *production* of the very service they are trying to sell.

Production personnel are not usually ideal sales personnel. Both the railroads and the traveling public would surely benefit if a greater incentive were provided for independent travel agents who can take care of hotel reservations and other important details of complete travel service as well as railroad transportation arrangements.

In the past, the railroads faced the matter of compensation to travel agents with mixed emotions. After federal control in World War I, individual lines raised the question repeatedly before the Transcontinental Passenger Association, and in 1922 replies to a questionnaire sent out to member lines by the association revealed a great lack of uniformity in relations with tourist agents and competing railroads. Sentiment grew for some kind of uniform remuneration and operating arrangements with tourist agents. A tentative arrangement in 1923 was followed by establishment of the Tourist Travel Clearing Agency in 1927. Several individual railroads took the initiative and set the pace. Under the T. T. C. A. plan compensation was paid only on all-expense tour traffic destined to western resort area points. The commission rate varied because it was a fixed amount on tickets to various points, but, overall, on summer excursions it averaged 6½ per cent of round-trip fares.

Following World War II a development of interest to travel agents was the formation of the Rail Travel Promotion Agency by the majority of the railroads of the United States, providing for the payment of "compensation to tourist

agents and travel bureaus on round-trip, all-expense, tourist traffic via the railroads." The new arrangement, which became effective June 1, 1946, was considerably more attractive than the arrangements of the railroads prior to the war in that (1) the rate of compensation was increased from approximately 6½ to 10 per cent; (2) it provided for deduction of commission at time of sale instead of reimbursement following remittance; (3) the number of participating railroads was considerably greater; and (4) forms for reporting sales were simplified.

Under the new R. T. P. A. contract the railroads do not pay commissions on "straight" railroad transportation—but confine remuneration to all-expense tours, which include, in addition to railroad transportation, one or more of the following services: Lodging, meals, sightseeing trips, specially-provided local transportation, services of guides or escorts, tours via steamship lines, and other similar services. The entire cost of any tour must be sold at a price prepaid in full by the passenger. The cost of the all-expense features, in addition to the transportation, must be not less than 20 per cent of the railroad transportation charge, or not less than \$15, whichever is higher.

What the British Do

By way of comparison, the British railways, even prior to World War II, pursued a more flexible policy. The London Midland & Scottish, for instance, widened its range of representation by appointing individuals or firms as auxiliary ticket agents, located in populous areas, at varying distances from the station, who sold, for remuneration, such tickets as the company considered it desirable they should stock. These agents established themselves as travel experts, supplying their customers with transportation at home and abroad by rail, steamer, highway and air, not acting, however, for any transport concern of which the railway did not approve. Complete travel services were provided by the auxiliary ticket agents—hotel accommodations, sightseeing tours, guides, money exchange, etc., as is the practice of travel agents in this country. By using the services of these agents, the railway company was able to obtain publicity, representation for the sale of tickets and other benefits without itself setting up separate organizations.

The June, 1946, Rail Travel Promotion Agency contract clearly indicates that the American railroads are beckoning to travel agents for assistance in the marketing of all-expense tours. The next step may well be the extension of these brokerage arrangements to encourage marketing straight railroad travel without requiring all-expense tour combinations.

The I. C.'s Stores Operations Mechanized

Ingenuity and proper planning, plus extensive use of mechanical equipment, in addition to helping promote safety, have lowered material-handling costs and reduced the volume of damaged goods*

UNDoubtedly some of the credit for the Illinois Central's achievement of the lowest ratio of reportable injuries per million man-hours worked among the Class I carriers during 1946 was due to the splendid equipment we have for performing our work and the proper use of such equipment by our employees. We use practically every kind of mechanical equipment for handling materials and freight, including overhead and locomotive cranes, crane trucks, monorails, hoists, lift and fork trucks, tractors, trailers, skids, pallets, baskets for crane handling, conveyors, motorcycles, midget tractors, dump trucks, street trucks, pillar cranes, special-type cranes for handling bridge stringers and caps, and other special cranes for handling car trucks, wheels and couplers on car repair tracks.

The overhead cranes in our shops and storage yards range from 250-ton models, which are used for picking up heavy locomotives, to the smaller serv-

* Abstract of an address before the First National Conference on Materials Handling, held concurrently with the Materials Handling Exposition at Cleveland, Ohio, on January 16.

By B. T. ADAMS
General Storekeeper, Illinois Central

ice type of 5, 10 and 20-ton capacity, used in conjunction with shop work, and ½, 1, and 2-ton models for handling heavy materials at shop machines.

Avoid Manual Lifting

To conserve the energy of our workmen we have endeavored to place cranes at all points where it is necessary for them to lift loads of 50 lb. or more. Overhead cranes are used over a wide area of our storage yards where heavy castings and forgings for locomotives and cars are stored. Through the use of these cranes, heavy materials can be unloaded by means of a sling or magnet and placed on storage ramps, or they may be moved into the shops as required for making repairs to locomotives, cars and other equipment. In addition, frogs and switches, bridge piling and lumber, signal material, poles, track spikes and bolts in kegs, brake

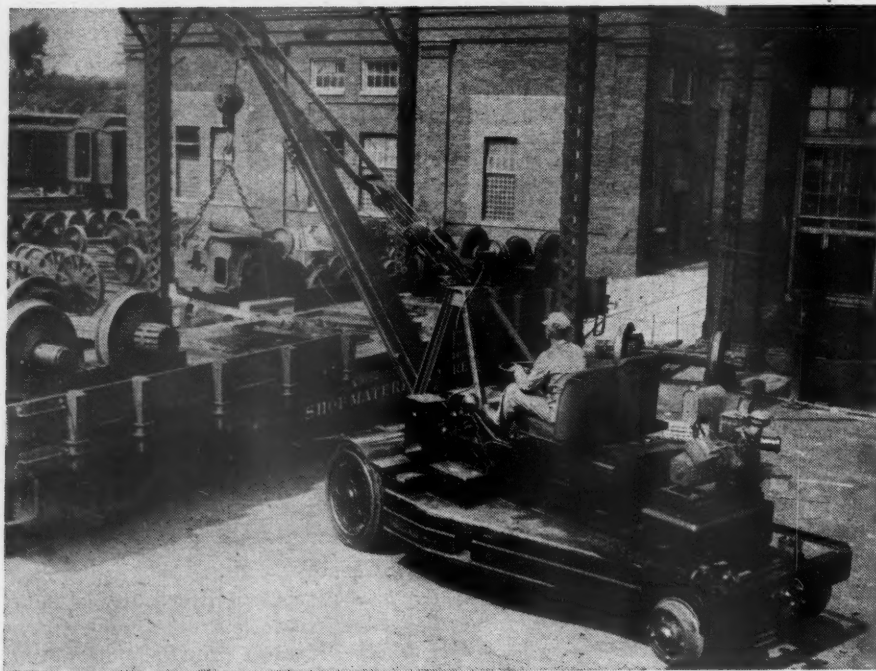
shoes, springs, flues, bar iron and steel, plates, sheets, tubing, brake beams, couplers, and all other similar materials used extensively on the railroad, may be unloaded directly from freight cars.

In our shops we have organized delivery forces which use motorcycles equipped with boxes capable of carrying up to 500 lb. Midget tractors with trailers are also used in this service, and the men operating these machines make regular trips through the shops and pick up material orders from the various foremen. Delivery is made of all the light material on the next trip. If the material is too heavy for the motorcycles or midget tractors to handle, the ticket is left with the store stockman, who loads the material on a skid, pallet or trailer for delivery by lift truck or tractor to the spot indicated on the material requisition.

In scrap yards, where discarded locomotives, cars, tanks, bridge girders, turntables and other large items are cut up for sale as melting scrap, we have other overhead or locomotive-type cranes of proper capacity for the work required. For the smaller scrap piles we use magnet-equipped cranes for handling quickly large quantities with the minimum of hand work.

Less Material Damaged

In our storehouses, fork trucks with pallets are used for transporting material and supplies from cars. By this means we are able to eliminate rehandling material and supplies used in large quantities, since the pallets are transported to places of storage and tiered to the permissible height by the fork trucks. This type of storage conserves floor space by utilizing the full cubical capacity of the facility. We have extended this type of material handling to include many items formerly difficult to unload and move to storage. By using metal pallets with racks, we can stack in tiers articles like oil cans, buckets, oilers, brooms, scoops, shovels, ballast forks, lantern and flashlight batteries, coated welding wire, lanterns, pipe covering and insulated wire, in such manner that they are not mashed or damaged. In addition, with this type of pallet, material can be withdrawn to fill orders without disturbing the pallets above or below. Thus,



Mobile swing-boom crane, equipped with retractable flanged wheels and standard rubber-tired wheels, unloading electric traction motors and Diesel locomotive power truck wheels

we have reduced man-hours for unloading and storing materials tremendously, and have cut damage to materials by avoiding rehandling.

We use flat-type pallets, both wood and steel, all 48 in. by 48 in., in handling and storing cement in cloth and paper bags, soda ash in paper bags, toilet paper, paper drinking cups, battery renews, boiler lagging, insulated rail joints, nails, rivets, nuts and washers in kegs, fire brick, arch brick, and many other items that are purchased and handled in large quantities. We also use pallets outside of storehouses for handling pressed steel parts, air brake cylinders, draft gear, coil springs, and other items which can be moved without rehandling, to points in the shop where they are to be applied. At our car repair points, this method permits the maintenance of a continuous flow of material to the forces engaged in repairing cars at each spot along the repair lines.

Handling Sugar on the Docks

Some years ago we had an unusual experience on our docks at New Orleans, La., where we handle a large volume of imported sugar. As the sugar was unloaded from ships it was deposited on the wharf, where 10 work gangs, 15 men to each gang, moved it to cars and placed it for shipment. These men had considerable experience in this type of work and worked together so well that they kept the sugar moving to the cars as fast as it could be unloaded from the boats. However, we began to experience a shortage of man-power and, consequently, the sugar accumulated on the docks. As a result of our experience with fork trucks around shops and storehouses we decided to try this equipment for handling sugar. First, two men familiar with fork-truck operations were assigned to study the problem. Upon their recommendation that the sugar could be handled efficiently by the trucks we secured two one-ton trucks equipped with special forks designed to slip under the bags easily without tearing them.

To load sugar bags from the dock, two portable jib cranes mounted on a four-wheel base, with swinging boom and a traveling hoist of $\frac{1}{2}$ -ton capacity, equipped with grab-hooks, were installed. These cranes picked up the sugar from the dock floor and deposited it on special pallets holding six bags each (330 lb. per bag). The lift trucks then picked the bags off the pallets, which were then available for other loads, and placed them in the car. Two men could load six bags on the pallets in one minute, and the lift truck was able to make a trip to the car and return in one minute. Thus, one ton of sugar was



Above—Overhead cranes are used in material yards to transport heavy castings and forgings to repair points or to load them into outgoing cars. Below—Skid loading of railway material is playing a major part in expediting shipments



moved and loaded every minute. While this rate could not be maintained throughout the day, it was found that a crew of four men loading with the jib crane and lift truck could work at a rate of one ton every two minutes, or 30 tons per hour. This crew included two men with the jib crane, one truck operator, and one man to open and close car doors and to assist in placing the sugar in cars. Eventually we provided a set-up of 12 lift trucks, 12 floor cranes and 48 men to do the work. This reduced handling costs from 23 to 12 cents per ton, and, in addition, required no manual lifting.

We also use platform-type lift trucks

with flat-top and box skids to good advantage in our shops and storehouse for moving material from one machine to another, and from shop to storehouse for shipment. At each machine where small parts are forged or finished, the parts are allowed to fall into a box-type skid. Where this is not practicable, the parts are placed in the skids by the shop man as each operation is completed. Shipment of this material to other stores and shops is made in the same skids without rehandling.

Box-type skids which can be handled with fork trucks are also used in our general store for assembling shipments for subordinate stores. This makes it

possible for the section stockman to take materials in small quantities from shelves or racks and move them to the proper freight car with a power truck. This not only eliminates rehandling at the forwarding store, but enables the receiving store to unload the skids with power or hand-lift trucks and move them to the proper location without picking the material up from the car floor. When empty, whether at an outlying storehouse, shop or roundhouse, the skids are loaded with released materials, such as journal bearings, air brake hose, angle cocks, steam conduits and stoker parts, and are returned to the general store for repairs.

We receive considerable assistance from manufacturers in loading material in cars as specified on our orders—particularly such items as steel bars, shapes, plates and sheets, brake shoes, springs, tires, flues, tubing and brake beams, which are loaded in open cars and properly separated for unloading with cranes and slings or magnets. Also, brass castings and journal bearings are placed in box skids at the foundries and shipped in that manner to facilitate unloading with lift trucks. Since scrap journal brass and brass castings are normally returned to the foundries in skid boxes, there is a two-way utilization of the boxes.

We are endeavoring to increase the volume of material shipped to us loaded on pallets. Furthermore, we would like to have small articles shipped on pallets strapped to prevent shifting. In this category are soda ash, cement, fire brick, arch brick, draft gear, boiler lagging, toilet paper, coopering paper, nails, rivets, bolts and other such items.

I have refrained from quoting handling costs for the reason that conditions differ so greatly that costs at one point would not be representative at another. Governing factors include the type and location of buildings used for stores or warehouses; track facilities for placing cars for unloading and loading; width of platforms; width of aisles in warehouses; the travel distance for lift trucks from cars to storage space; height of ceilings in warehouses for tiering material with fork trucks; absence of posts or columns in buildings where lift trucks operate; and the kinds of commodities stored.

Without new storehouses or warehouses at all locations, not all of the buildings we use are designed for palletized material handling. In many cases we have converted them to accommodate that type of material handling to the best advantage. We have, however, learned from experience how to build new warehouses so they will provide adequate overhead room for tiering material with fork trucks and pallets.

Class I Roads Had 1946 Net Income of \$287,000,000

CLASS I railroads in 1946 had an estimated net income, after interest and rentals, of \$287,000,000, as compared to a net income of \$447,384,678 in 1945, according to the Bureau of Railway Economics of the Association of American Railroads. The net railway operating income, before interest and rentals, was \$619,284,724 in 1946, compared with \$849,228,195 in 1945.

The A.A.R. statement noted that the taxes and net earnings for 1946 are after taking credit in the accounts for carry-back tax credits, adding that such credits totaled approximately \$71,000,000 for December, 1946, and \$170,000,000 for the entire year. It said that both the net railway operating income and the net income for December and the 12 months would have been correspondingly reduced had the carry-back tax credits not been made. It also noted that the rate of return for 1946 averaged 2.74 per cent, compared with 3.64 per cent in the previous year.

Gross in 1946 amounted to \$7,627,313,394, compared with \$8,898,608,723 in 1945, a decrease of 14.3 per cent, while operating expenses in 1946 totaled \$6,357,550,666, compared with \$7,053,079,988 in 1945, a decrease of 9.9 per cent.

Thirty-six Class I roads failed to earn interest and rentals in 1946, of which 18 were in the Eastern district, 7 in the Southern region, and 11 in the Western district.

Class I roads in the Eastern district in 1946 had an estimated net income of \$60,000,000, compared with \$166,858,287 in 1945. These same roads had a net railway operating income of \$208,601,-

753 in 1946, compared with \$340,097,265 in 1945.

Gross in the Eastern district in 1946 totaled \$3,402,744,674, a decrease of 9.6 per cent compared with 1945, while operating expenses totaled \$2,926,673,791, a decrease of 7.6 per cent.

Class I roads in the Southern region in 1946 had an estimated net income of \$33,000,000, compared with \$45,708,431 in 1945. These same roads had a net railway operating income of \$92,623,447 in 1946, compared with \$118,121,226 in 1945.

Gross in the Southern region in 1946 totaled \$1,061,620,515, a decrease of 13.7 per cent compared with 1945, while operating expenses totaled \$880,765,181, a decrease of 7.3 per cent.

Class I roads in the Western district in 1946 had an estimated net income of \$194,000,000, compared with \$234,817,960 in 1945. These same roads had a net railway operating income of \$318,059,524 in 1946, compared with \$391,009,704 in 1945.

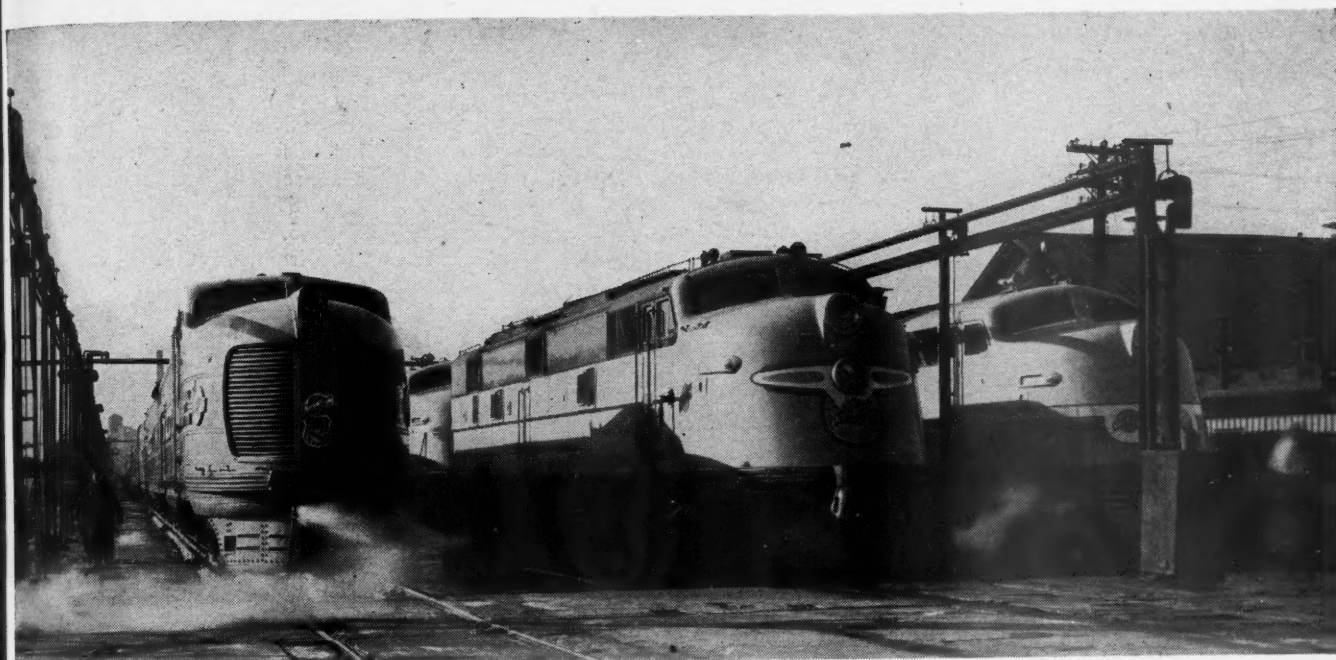
Gross in the Western district in 1946 totaled \$3,162,948,205, a decrease of 19 per cent compared with 1945, while operating expenses totaled \$2,550,111,694, a decrease of 13.1 per cent.

Class I Railroads—United States			
Twelve Months Ended December 31			
	1946	1945	
Total operating revenues	\$7,627,313,394	\$8,898,608,723	
Total operating expenses	6,357,550,666	7,053,079,988	
Operating Ratio—per cent	83.35	79.26	
Taxes	498,573,630	822,311,475	
Net railway operating income (Earnings before charges)	619,284,724	849,228,195	
Net income, after charges (estimated)	287,000,000	447,384,678	

* * *



Chesapeake & Ohio passenger train at the new station at Prince, W. Va.



Chicago & North Western Diesel streamliner service ramp at Chicago shops

The Terminal Filtration of Diesel Fuel

Chicago & North Western tests effect of filter installed at Chicago streamliner ramp—Locomotive maintenance reduced

By R. E. COUGHLAN

Chief Metallurgist and Engineer of Tests,
Chicago & North Western, Chicago

IN the operation of Diesel locomotives one of the most important factors necessary for economical operation is clean fuel oil.

Practically all of the Diesel fuel oil furnished from reputable refineries will comply in all respect to standard specifications which allow a maximum of 0.50 per cent of moisture and sediment. During the later months of 1944 the Chicago & North Western ran an extensive series of tests on successive days in order to determine the actual character of the Diesel fuel oil as it was being supplied to the Diesel locomotives.

The regular standard specification tests, such as gravity, flash, viscosity, pour point, moisture and sediment, all showed that the oil met specification requirements. Further tests and observation showed the condition of the oil, on ten different occasions, to be as shown in Table I.

On January 10, 1945, a new type of Diesel fuel filter was installed at the C. & N. W. streamliner ramp at Chicago shops, where the Diesel "400" fleet and the "City of Denver," "City of San Francisco," "City of Los Angeles," and "City of Portland" are serviced. On six successive days after this installation, an average check of the fuel oil as delivered



Sectional view of Bowser filter used for purifying Diesel fuel oil

Table I—Condition of Diesel Fuel Oil before Adequate Filtering

Sample No.	Appearance	Moisture	Sediment
1	Cloudy	Trace	Trace
2	Clear	Nil	Nil
3	Clear	Nil	Nil
4	Clear	Nil	Nil
5	Clear	Nil	Nil
6	Clear	Nil	Nil
7	Cloudy	Trace	Trace
8	Cloudy	Trace	Trace
9	Cloudy	Trace	Trace
10	Cloudy	Trace	Trace

showed the clear appearance and complete absence of moisture and sediment indicated in Table II.

Table II—Improvement in Six Samples of Diesel Fuel Oil after Filtering

Sample No.	Appearance	Moisture	Sediment
1	Clear	Nil	Nil
2	Clear	Nil	Nil
3	Clear	Nil	Nil
4	Clear	Nil	Nil
5	Clear	Nil	Nil
6	Clear	Nil	Nil

To accomplish this improvement, the filter had to remove from the fuel abrasive particles as small as $\frac{1}{2}$ micron (approximately .00002 in.). The practical requirements necessitated accomplishing this with a large volume of fuel pumped from storage and delivered without reducing volume or pressure to affect the normal, efficient servicing operations at the ramp.



The Bowser filter installed in delivery line at the fuel service station

A conventional installation was made with storage, strainer, pump, air release, filter and delivery line in that order, and all of standard, conventional types except the filter.

The filter consisted of a shell of 69-gal. capacity fitted with a removable cover

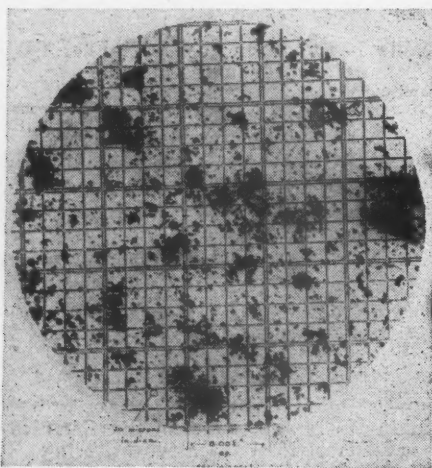


Photo-micrograph of impurities removed from the Diesel fuel oil

and inlet and outlet pressure gage. The filter medium was a group of 34 expendable cartridges mounted in the shell to allow free passage of fuel from the exterior to the interior of the cartridges and thence to the outlet. This cartridge arrangement allowed filtered impurities to drop to the sump in the bottom of the shell or collect on the outside surface of the cartridge. The removable cover allows easy replacement of used cartridges and cleaning of the sump.

The material in these cartridges was a processed cellulose fiber laid and rolled to form a cylinder. The cross-sectional structure of this cylinder is designed to trap impurities in the oil without undue resistance to the flow pressure.

One of the illustrations shows the impurities taken from a backwash sample from a filter cartridge and from the sump and indicates the fine degree of filtration attained. Four of the marked sections on this illustration represent .008 in., or 200 microns. Chemical analyses revealed that the material removed from the oil by these elements consisted prin-

cipally of silica, carbon, pipeline rust and some oil sediment. All of these materials were of such fine character and consistency that they were not apparent on the regular specification tests.

A total of five experimental runs involving five sets of cartridges was made. The first test from January 10, 1945, to May 23, 1945, filtered 984,235 gal. The second test from May 24, 1945, to September 19, 1945, filtered 1,130,462 gal. The third from September 20, 1945, to December 12, 1945, filtered 848,812 gal. The fourth from December 13, 1945, to May 16, 1946, totaled 1,607,021 gal. The fifth from May 17, 1946, to October 1, 1946, filtered 1,698,045 gal. The total amount of Diesel fuel oil filtered through this facility was 7,118,575 gal. as of December 1, 1946. Periodical tests made from time to time on the filtered oil consistently revealed that the oil supplied to the Diesel units was entirely free of all traces of silica, carbon, pipeline rust, turbidity and oil sediment.

The important consideration—the cost of filtration—was determined to be less than 4.5 cents per 1,000 gal. of fuel oil filtered. This cost is based on the replacement cost of the expendable filter cartridges.

As a result of these tests in actual service operation, this type of filter installation has been made permanent on the Diesel service ramp at Chicago shops and it is proposed to use the same type of filtration on future installations, as service requires.

The economy of this type of filtering of the Diesel fuel oil was apparent in elimination of maintenance cost on Diesel fuel-oil injectors and nozzles, and the increased life and reduced maintenance on the standard filters which are part of the Diesel locomotive equipment.

Control for Diesel-Electric Drives

A new electro-hydraulic governing system for Diesel-electric drives, readily adaptable for locomotives, ship propulsion, mobile and stationary power plants, oil well drilling rigs, and industrial uses where Diesel-electric drives are employed, has been developed by the General Electric Company. Designed especially for power plant load control, the salient features of the system are exceptional speed control with good stability, highly responsive to changes in generator demand and engine ability, engine protection, remote control and multiple-unit operations.

Speed measurement is performed by an engine-driven a. c. tachometer gener-

ator whose output voltage is proportional to speed.

Speed is maintained at pre-set values, by feeding the speed indication to a hydraulic servo-mechanism which controls the engine fuel and generator excitation, and makes possible full utilization of the engine without danger of overloading.

The system operates stably over a wide speed range, and permits the use of the lowest possible engine speed commensurate with power requirements. The use of feedback from the electrical load allows the control to anticipate the speed changes which would be produced by changes in generator demand, and therefore minimizes transient regulation.

Engine protection safety features are built in this new governing system. Overspeed protection is provided by an overspeed trip switch which automati-

cally cuts off the fuel supply when the engine overspeeds. If the engine lubricating oil pressure drops to the danger level, a short-circuiting switch drops the engine speed automatically to idle. Similar type switches, functioning with the same end result, operate when apparatus approaches dangerously high temperatures or on occurrence of a ground in the main power circuit.

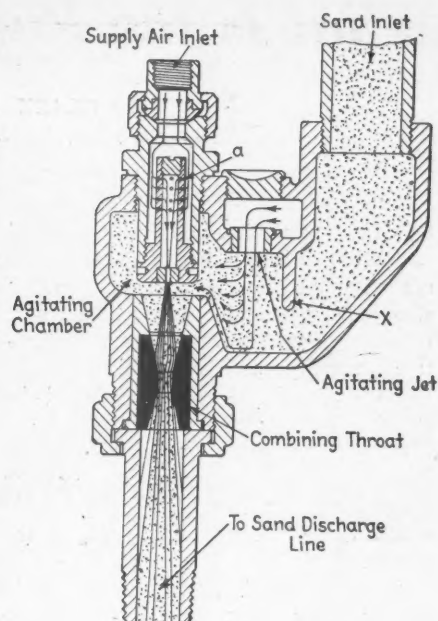
Remote control in this system is readily achieved. The manual and automatic controls may be located at any desired distance from the prime mover. Speed modulation can be infinite or by definite steps as in throttle notches. The engine-speed indicator is remote from the fuel control.

Multiple-unit operation, as in the case of Diesel-electric locomotives, is readily accomplished.

Sand Trap for Steam Locomotives

A sand trap developed to operate at an economical air rate while delivering the required quantity of sand at a velocity sufficient to overcome the effects of cross winds or other turbulence around the wheels is available from the New York Air Brake Company, 420 Lexington avenue, New York. This trap known as the type HS-96 is designed so that high velocity delivery is obtained with practically no wear on any but inexpensive and easily replaceable parts of the trap.

The ejector principle is used to create a vacuum within the trap. This vacuum causes atmospheric air to be drawn in to augment the air flowing through the



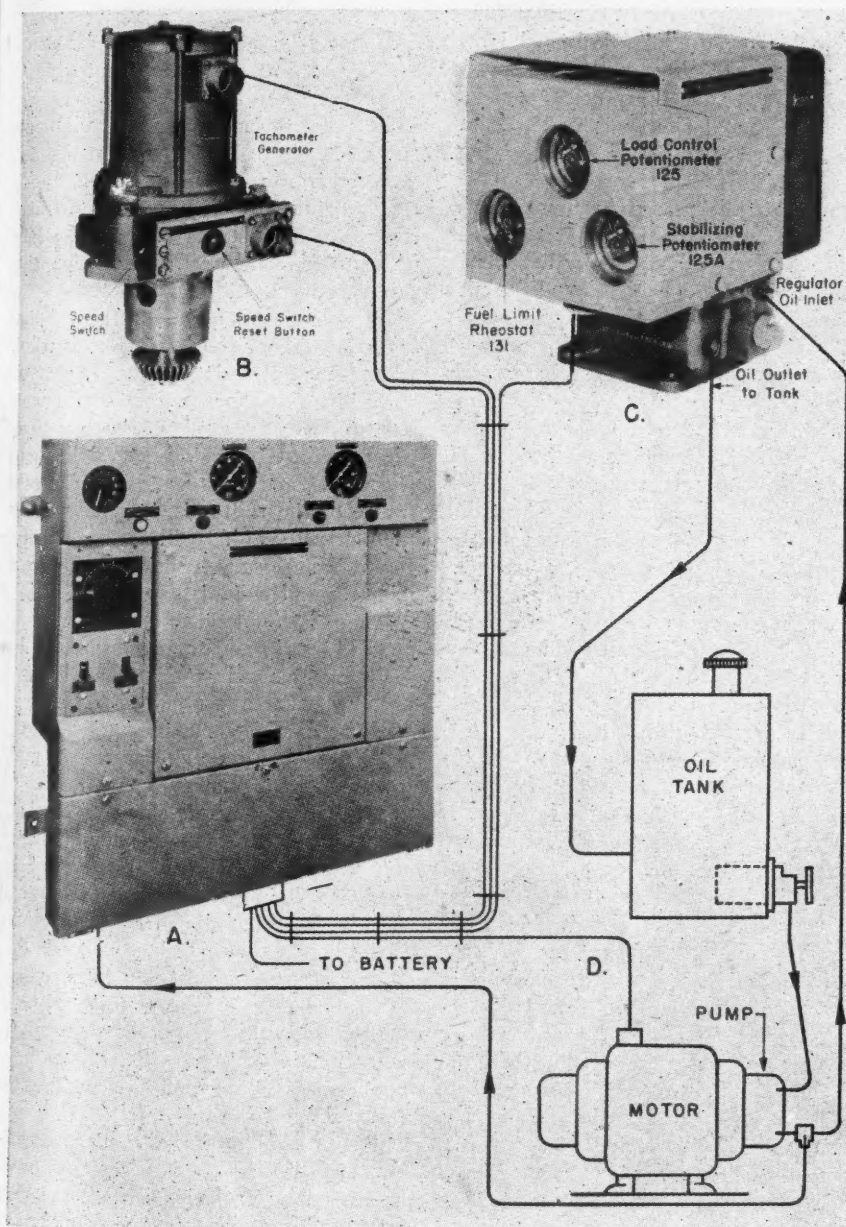
Type HS-96 sand trap

sand pipe and to develop a flow of high velocity. Thus the supply of compressed air can be limited to flow through a small port for economy of air consumption. Drawing atmospheric air into the trap also agitates the sand so that it feeds uniformly and in proper quantity into the outlet air stream.

Sand is fed by gravity from the sand dome or box into the trap through the sand inlet. A partition (X in the illustration) and the angle of repose hold the sand at the bottom of the agitating chamber.

When the sanders are in use, air from the operating valve enters the supply air inlet and flows to the sanding jet through a multiplicity of annular drilled ports (a) which are of smaller size than the jet to prevent entrance of foreign substances which might plug it up. Air leaving the jet expands and gains velocity as it moves toward the combining throat, creating a partial vacuum in the agitating chamber. This causes atmospheric air to be drawn in from the atmospheric intake through the agitating jet. Sand is agitated and picked up from its repose position so that the agitating chamber is filled with sand-laden air which is drawn into the stream of air from the sanding jet and blown out into the sand discharge line for delivery to the rail.

The sand-laden air does not attain a high velocity until it is on its way out of the trap through the wear-resisting rubber combining throat and a special union stud, which together absorb the major part of the sand-blasting effect. To regulate the rate of sand delivery the orifice bushing, or agitating jet, in the atmospheric intake passage at the point of entry to the agitating chamber can be varied in size.



Power Plant Regulating System

A. Engine control panel B. Tachometer generator C. Power plant regulator D. Regulator pressure oil system

What Is the Railroads' Future?

By CLARK HUNGERFORD
President, St. Louis-San Francisco

THIS country has good railroads, and will continue to need good railroads not only for such emergencies as war, but also for handling the peace-time traffic resulting from America's vast productive capacity and consuming needs. Good railroads, of course, should be strong, both physically and financially. How we can keep our railroads physically and financially strong is a question to which we should give considerable thought as we turn our eyes to the future.

If our railroads are to be physically strong, they must at all times have sufficient equipment and capacity to meet all transportation demands and to provide the best transportation service at the lowest possible cost. They must continue and accelerate the kind of research and technological progress which were responsible for the truly phenomenal gain in efficiency and service in the past 25 years.

To be physically strong, they must also be financially strong. They must be in a position to make the sort of living that will enable them to attract the investment they must have in order to acquire the equipment they need and to carry on their research and improvement program.

Needed: Traffic and Revenue

There is only one way that the railroads can make a living. First of all, they must handle a large volume of traffic. This is necessary because a railroad is a machine for the production of mass transportation in volume. With enough work to do, there is no transportation machine on earth which compares with it in all-round efficiency. But with too little to do, no amount of efficiency in operations can prevent distressing results. However, volume traffic in itself is not enough. The traffic must yield revenues that will make it possible for the railroads not only to meet all their costs, but also pay their investors a fair and reasonable return on their money.

The first question, then, is: Will the railroads be able to attract and hold traffic in sufficient volume?

Immediately after the war, the railroads took steps to get and keep business in the years ahead. They set out to rehabilitate and improve both their passenger and freight service. In spite of difficulties, they have made consider-

This article is an abstract of an address at the annual dinner of the Cincinnati Traffic Club, held in Cincinnati, Ohio, February 11.

able progress in that direction. For instance, in a little more than a year, they ordered considerably more passenger equipment than was built in the ten years just before the war.

But better facilities and improved service alone will not bring the railroads the volume of traffic they must have to insure successful financial operation. In the years ahead, the railroads will face the sharpest competition in their history. They will have to compete with other forms of transportation whose facilities, in most cases, have tremendously increased in number and have also improved. Under our present transportation policy, they will have to compete on terms which handicap the railroads. I refer particularly to public aid to other forms of transportation; to varying policies of taxation which reduce the cost to be met by other common carriers, and to regulations which have the effect of adding to the cost of producing rail transportation. This situation raises a series question about the position of the railroads in the future.

Even assuming that the railroads are offered a large volume of traffic to haul, their financial status will not necessarily be all it should be. The experiences of the past year proved that. Although the railroads handled a great deal more traffic in 1946 than they did in 1926 and took in considerably more money, the financial results were much poorer last year than they were twenty years ago.

In 1926, the rate of return earned on the net investment in railroads, after allowing for depreciation, was 5.35 per cent. In 1946, it was approximately 2.75 per cent, or about one-half less than in 1926. This is the net railway operating income, the whole return on all the capital invested in the property less depreciation. The net income left for the stockholders, who are the real owners of the railroads, declined even more. In 1946, it was barely more than one-third of what it was in 1926—and this despite the vastly increased service performed and the total revenue taken in.

The principal reasons for this are quite clear. In 1946, the average price paid by railroads for their materials, supplies and fuel was about 50 per cent more than it was in 1926. At the same time, the average annual earnings per railroad employee increased more than 85 per cent. On the other hand, the average revenue which railroads received for hauling a ton of freight a mile went down about 10 per cent, while the average revenue for carrying a passenger one mile declined more than 30 per cent.

Inadequate Rate Increase

The rate situation during the coming year will be improved as a result of the increased freight rates authorized by the Interstate Commerce Commission which became effective at the beginning of 1947. There is a serious question whether these raises in rates will be sufficient to restore the proper balance between railroad income and outgo. Therefore, there is no good reason for feeling that the railroads' financial worries are over. In fact, the railroads' financial results in 1946 sound a distinct warning—a warning we must heed if we are to continue to have the kind of railroads and railroad service that this country needs and expects.

It portends no good for the railroad industry and for the country as a whole when the railroads during a year of record-breaking peace-time traffic were able to earn a return of less than three per cent on the funds invested in them. Reasonable earnings are essential to the future of the railroads, because without them private capital will not be attracted for the necessary continued improvement in railroad plant and facilities.

There is no standing still in the railroad industry, and there must never be. Railroad research which has produced such remarkable results in recent decades must be carried on to a greater degree than ever before. The railroads must be able to take advantage of scientific advances, and must be able to contribute their full share to the economic life of the nation in times of peace and be ready to help safeguard us from our enemies in times of war. It is obvious that whether they will be able to do this in the future depends to a large extent on traffic, rates and operating costs. It depends also on public policy as to transportation, a matter which is entirely outside of and beyond the business of railroading.

The problem of the railroads is a problem for all of us. It is a business problem, a public problem, because the very future and security of our country are so largely dependent upon the low-cost dependable mass transportation which only railroads can provide.

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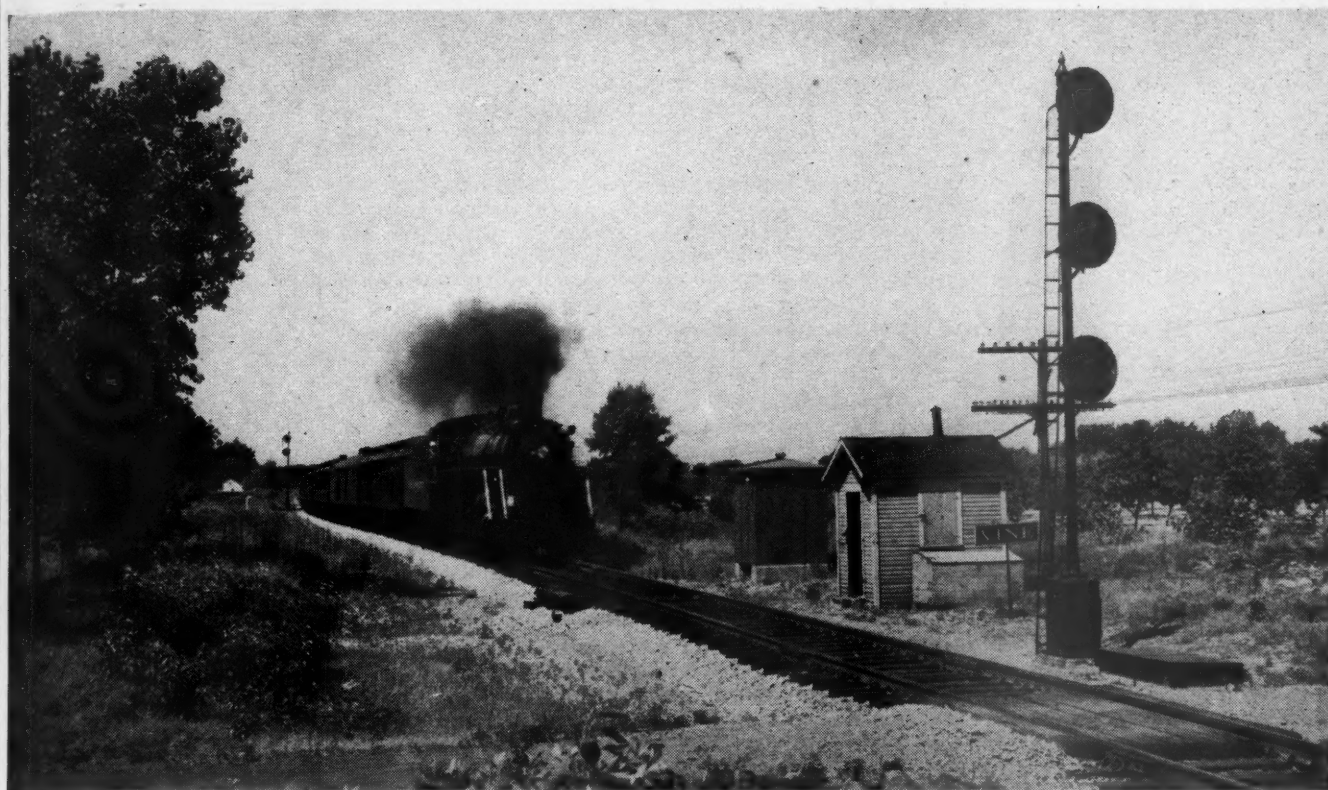
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With C. T. C. trains are advanced to make close meets, thus saving considerable time every day

More C.T.C. on the Pere Marquette

**Additional 47-mile section is proof of the benefits to
train operation on a medium-traffic single-track line**

THE Pere Marquette was one of the few pioneers in train operation by signaling indication, having installed a section of centralized traffic control on 20 miles between Mt. Morris, Mich., and Bridgeport in 1928, as well as on other territories since then; therefore, the most recent project on 47.7 miles of single track between St. Joseph, Mich., and Porter, Ind., completed in 1946, is important as further "proof of the pudding."

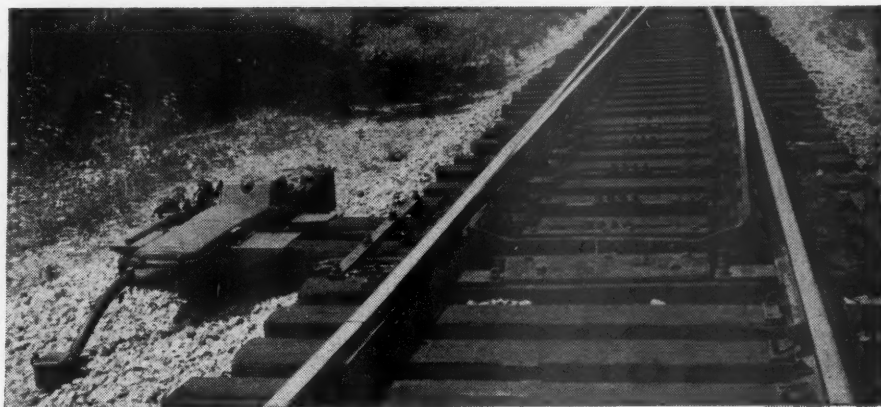
Character of Line and Traffic

This 47.7 miles of track is part of the Pere Marquette route between Chicago and Detroit, via Grand Rapids. Between Chicago and Porter, 47.3 miles, Pere Marquette trains are operated over the tracks of the New York Central and the Baltimore & Ohio Chicago Terminal. Eastward from Porter, the Pere Marquette is, in general, parallel with, but a mile or more from, the south and east shore of Lake Michigan. The curvature is light, and the grades are

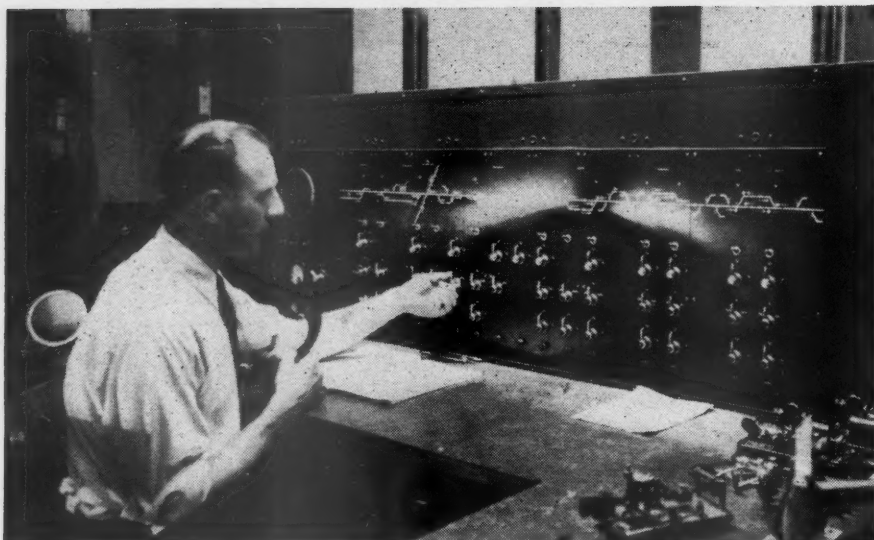
not excessive, except for two miles from St. Joseph westward, where the line climbs from about 10 ft. above lake level to 85 ft. within two miles. The track is in good condition, with 112-lb. rail, good ties and crushed rock ballast. The maximum permissible speeds are

70 m.p.h. for passenger trains and 40 m.p.h. for freight trains.

In the territory between Porter and St. Joseph the schedules include four passenger trains each way and four through freight trains each way daily. One local freight train operates from



The power switch machines obviate train stops



The C. T. C. control machine in the office at New Buffalo

New Buffalo to St. Joseph and return, and a second local freight operates from New Buffalo to Porter and return. Extra trains are operated as required, so that the number of trains daily ranges from 25 to 30.

The Pere Marquette already had double track for four miles and single track with C. T. C. for 28 miles east from Grand Rapids to Lake Odessa, as well as double track 6 miles and single track with C. T. C. for 33 miles from Grand Rapids west to Fennville. The St. Joseph-Porter section was chosen for the 1946 C. T. C. project because of the train delays previously experienced in this territory. At New Buffalo, which is about midway between St. Joseph and Porter, all trains stop for coal and water. Also the local freight trains working both ways out of New Buffalo terminate at that point. Some of the through

freight trains stop at New Buffalo to set out and pick up cars. Another factor which complicates operations is that a large percentage of the trains are bunched during certain hours. On the whole, therefore, there was a greater need for C. T. C. on the St. Joseph-Porter section than on the 47.5 miles between St. Joseph and Fennville.

A section of two main tracks 3.9 miles long extends from switch No. 38 at St. Joseph to Vine. Sidings regularly used for the passing of trains are located at Livingston, Sawyer, New Buffalo, Michigan City and Porter. The switch at the west end of the siding at Porter is included in the interlocking at the junction with the New York Central. The new C. T. C. includes power switches and signals for authorizing train movements at the east switch at Porter, and at both switches at the other

sidings named above, as well as at both ends of the two main tracks at Vine and St. Joseph. The track and signal plan of the entire C. T. C. territory is shown in Fig. 1.

The C. T. C. control machine is located in the office at New Buffalo, which is about midway between the two ends of the territory. This machine is manipulated by an operator who works under the jurisdiction of the dispatcher, located at Waverly, Mich., 90 miles east of New Buffalo.

Signaling at Turnouts

The turnouts at most of the power switch layouts are No. 16, with 30-ft. points, so that trains may make diverging moves at speeds up to 35 m.p.h. As part of the program, track circuits were installed on the sidings equipped with power switch machines. These track circuits are in the control of the signals so that an engineman knows whether a siding is occupied. For example, referring to the layout at the west end of Sawyer as shown in Fig. 2, with the switch reversed and with the siding unoccupied, signal 1065 will display an aspect of red-over-yellow to authorize a train to enter the siding, and at the same time signal 1091 will display the Approach-Medium aspect, yellow-over-green. This gives the engineman advance information that he is to pull his train into an unoccupied siding and, accordingly, he can bring his train up to and through the turnout at the speed for which it is designed. On the other hand, if the distant signal were the single-unit type, capable of displaying Approach as the best aspect, then, according to rule, the engineman would be required to reduce to half authorized speed at the distant signal, and approach

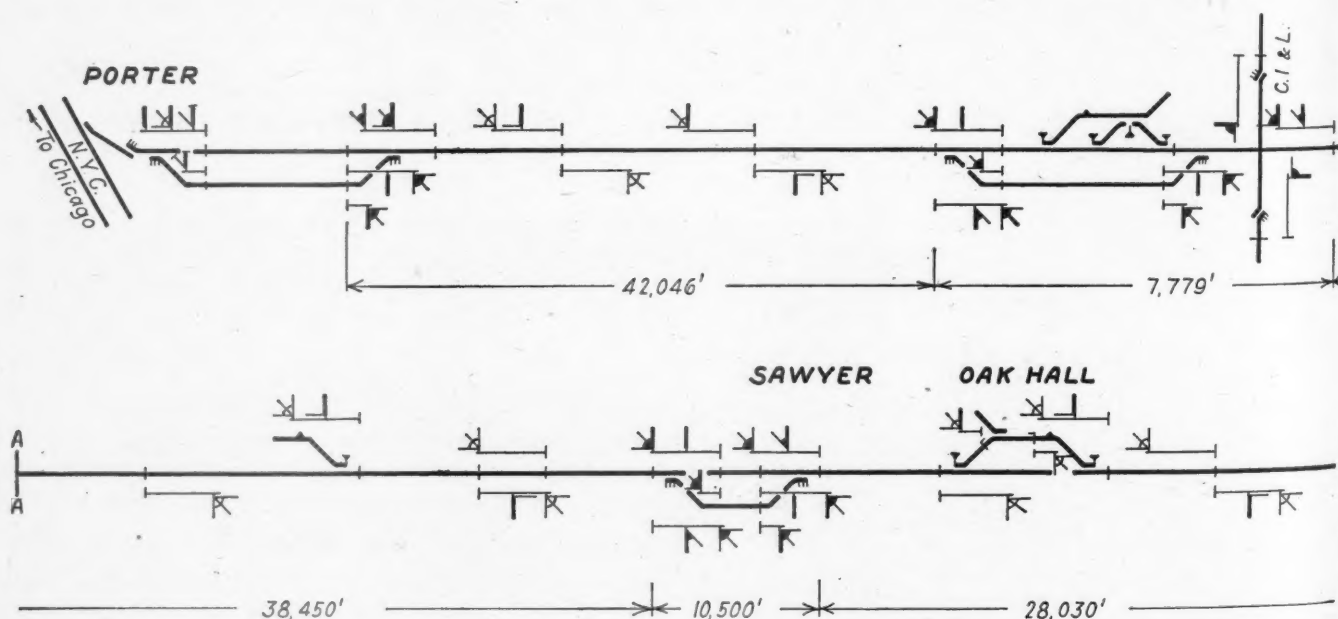


Fig. 1—The track and signal plan of the C. T. C. territory showing

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the station-entering signal prepared to stop short of that signal. Another use for the track circuits on the sidings is that if a siding is occupied, the signal cannot be cleared for a train to enter. At New Buffalo the siding is 2.3 miles long and, at a location near the center, there is a crossover between the siding and the main track, as shown in Fig. 3. This crossover is operated by hand-throw stands equipped with electric locks. These locks, as well as the two dwarf signals 1152 and 1153 on the siding, are controlled from the C. T. C. machine. These signals and the crossover permit various special train movements to be made when setting out or picking up cars, or when making meets. Referring to the plan, Fig. 1, the two outlying signals No. 1245 and 1246, east of Michigan City, are C. T. C. lever-controlled absolute Stop signals, the purpose being to permit switching moves to be made in Michigan City, while, at the same time, a westbound train can leave New Buffalo and proceed toward signal 1246.

Special Approach Locking

Approach locking was installed in connection with the operation of power switches and semi-automatic signals. If a signal, which has been cleared, is taken away by lever control, the switch can be operated without a time interval delay if no train has entered the approach locking section track circuits. But, if a train has occupied such a section, then the electric locking is placed in effect automatically at the field station and stays in effect until the train arrives at the field station and a member of the train crew places his switch padlock key in a release box and turns the key to operate contacts in the box. This practice has the safety feature of requiring the train

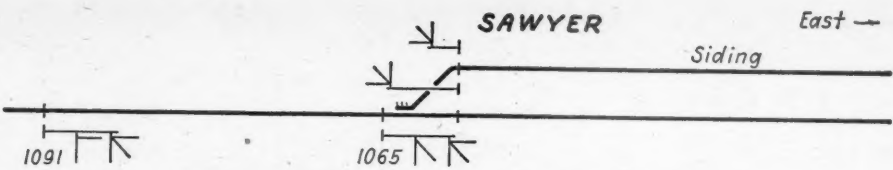


Fig. 2—Showing how Approach-Medium aspect on distant signal 1091 saves train time

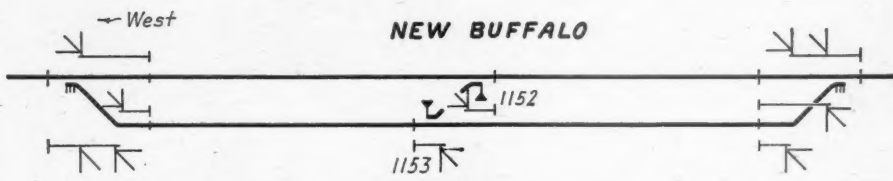
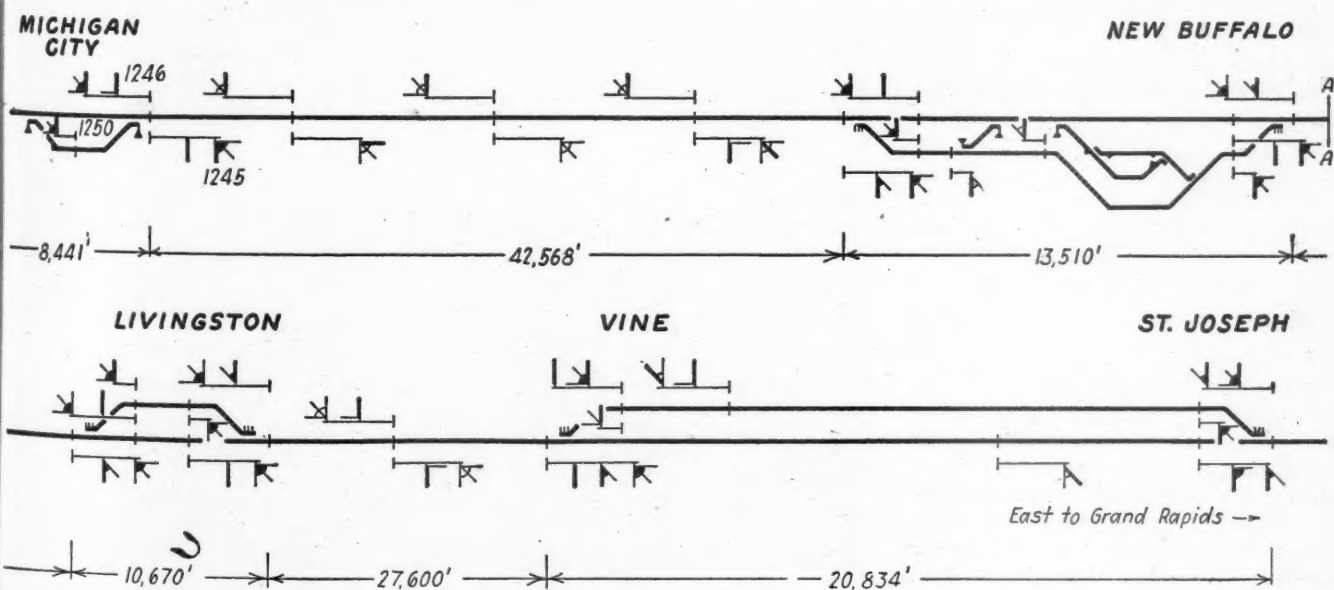


Fig. 3—Layout of crossover and signals at New Buffalo

to stop when a signal is taken away. This special arrangement was first installed on C. T. C. territory on the Pere Marquette in 1928, and has been included in all the C. T. C. projects installed on this railroad since that time. As part of the C. T. C. project, electric locks were installed on the hand-throw switches leading to spur tracks or industry tracks. At such layouts, a practice of the Pere Marquette is to install also a pipe-connected derail to prevent cars or locomotives on the spur track from fouling the main track, except when the electric lock is released and the switch reversed. At each power switch location the Pere Marquette provides a small frame building to be used as a warming room when it is necessary for a track man to stay on the job during severe snow storms to keep the switch clear of snow. This installation of C. T. C. was planned and installed by the signal forces

of the Pere Marquette, under the direction of H. C. Lorenzen, signal engineer and superintendent of telegraph. The C. T. C. control machine, line coding system, power switch machines and other new signaling equipment were furnished by the General Railway Signal Company.

NEW TUNNEL IN NEW ZEALAND. — A 4½-mile railway tunnel that will take six years to complete and will cut 15½ miles out of the Wellington-Featherston route was started recently in New Zealand, according to a recent issue of Foreign Commerce Weekly, a publication of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. The railway line now winds through the mountains in a course marked by sharp curves and grades as steep as 1 in 14. Grades on the new route will be limited to 1 in 60. The line through the tunnel will be electrified and construction is being undertaken at four points at once.



the locations of the sidings between St. Joseph, Mich., and Porter, Ind.



The first completed car of the fleet of 71 to be reconditioned

Pacific Electric Modernizes Cars

THE Pacific Electric is now in the process of rehabilitating 71 interurban cars at a cost of about \$7,500 each. Changes include the installation of individual seats, new lighting, improved ventilation and general refinements.

The redesigned cars will accommodate 80 passengers. They are fitted with sponge rubber-top spring-cushion seats covered with a green mottled mohair to blend with the light green interior and cream ceiling. Ample leg room is provided between seats, with spacious aisles permitting free movement through the car.

A new illuminating system has been installed with a reflector type lighting unit over each seat. An interior partition separating the smoking from the non-smoking section is made of shatter-proof glass which allows full view of the entire cars from either end.

Each window has been redesigned and equipped with a non-shatterable glass windbreak. It is about 1½ in. inside the regular windows, and 8 in. high, permitting the window to be raised without causing direct draft on the passenger. During summer months, when breezes are desirable, windows may be raised above the windbreak. Special louver ventilators also have been installed in the upper part of each third window to provide additional ventilation.

The vestibules on both ends of the car are enclosed, with trap doors above the steps and swinging doors to replace the former grids. The exterior is finished in the regular Pacific Electric red with black and orange trim, the name, "Pacific Electric," being in large black letters on an orange background above the windows.

The cars, which operate between Los Angeles, Cal., Compton, Long Beach and San Pedro, have a good rate of acceleration, an efficient braking system, and a maximum speed of 45 m.p.h.

The program provides for the modernization of approximately five cars per month until the entire fleet of 71 is completed.



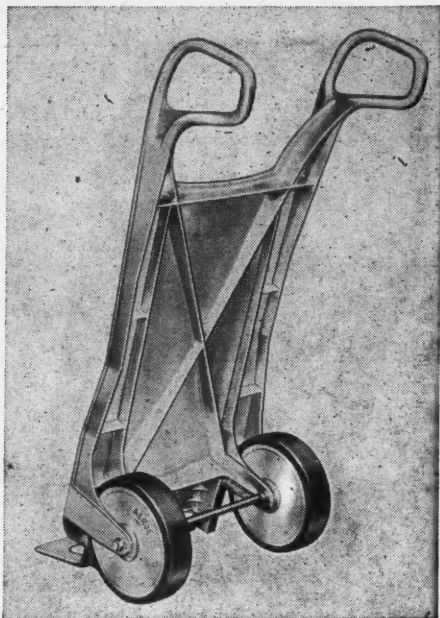
Interior of a modernized car showing full view glass partition, new seats, lighting system and glass window deflectors of the no-draft ventilating system

Universal Hand Truck

A new all-aluminum hand truck, designated the Universal, has been announced by the Aerol Co., 1823 East Washington blvd., Los Angeles 21, Cal., manufacturers of materials-handling equipment.

Of one-piece, permanent-mold, cast aluminum alloy, the hand truck is furnished with 12-in. by 3-in. aluminum, rubber-tired wheels that have sealed-in-grease roller bearings. These wheels are mounted on a full axle, and give the truck a rolling load capacity of 2,400 lb.

A feature of its design is a patented grip which protects the operator's hands and, at the same time, acts as supporting legs for the truck. Through use of the top part of this "Handsaver" grip, it is said, the operator can obtain up to 30 per cent more leverage, affording greater ease in breaking over the load.



The Universal rolls easily under capacity loads, facilitates material handling

Vogle Advises Berge to Halt "Erroneous" Political Statements About Freight Rates

In a recent letter to Wendell Berge, assistant attorney general directing the activities of the Anti-trust division of the Department of Justice, Alvin W. Vogle, vice-president of the DeBardeleben Coal Corporation of Birmingham, Ala., and an active figure in Shippers Advisory Board work, has challenged the government officer's repeated arguments that the railroads' "conspiracy" to fix freight rates unduly favors northern industry and retards the development of industry in the South.

Your recent statements concerning freight rates, and other statements of yours in the same tenor over the past several years, are erroneous, Mr. Vogle wrote.

My own thorough studies . . . support positively the conclusion that the southern freight rate system is correctly adapted to the South's economy and that the rates are definitely favorable. In fact, 75 per cent of our traffic moves at rates not higher than the northern level—and much of it at a lower level.

Simply stated: (a) Our manufactured products (competitive with like products of the North), and our products of agriculture, forest and mines, move into the North at the northern level of rates or less. (b) Our rates within the South are distinguished by low rates on raw materials to southern manufacturing points (primarily to aid our manufactured products to overcome distance disadvantages to northern

markets, but these low assembly charges also aid manufacture for southern markets). (c) The rates on northern manufactured products and mid-western agricultural products to the South are at the southern level.

The so-called "parity" you advocate would change all this—and to the advantage of the North, not the South. There would be increases to the North on many of our most important present products. There would be increased rates within the South on raw materials to processing points. And there would be greater reductions to the South from the North on manufactured products and from the mid-West on farm products than within the South.

We are respectfully suggesting to Attorney General Clark and to Dr. Steelman that the Department of Justice could apply its talents and spend the taxpayers money more usefully in other fields. In short, the prestige of a respected government department should not be employed to continually publicize such an erroneous viewpoint in a controversial situation to the injury and discredit of the South. The southern businessman best knows the economic system of which he is a part and can be relied on to exert his own efforts for correction of any disadvantages as they arise. He has given you absolutely no encouragement whatever in the era of your crusade.

The unit is built for smooth, quiet operation, and, it is claimed, combines strength and balance with low weight. It has a concave overall bed of one-inch aluminum, cast as a unit with a sturdy X-channel aluminum frame, which is said to eliminate the possibility of the cross-members or bolts coming loose or catching on loads, as well as any tendency for the truck to weave under heavy loads.

"Gray-Rite" Finish

A new finish, known as "Gray-Rite," has been introduced by Remington Rand, Inc., 315 Fourth ave., New York 10, and is now standard on the cabinets, files and other steel office equipment of this company. This new finish is designed to harmonize with existing standard finishes, and is said to reflect approximately four times more diffused light than the olive green finish used previously.

By reducing the contrast between papers and reflections from color-



The "Gray-Rite" finish of these Remington Rand cabinets blends with the general background in many offices

absorbing surfaces, such as desk tops, Gray-Rite is said to lessen eye strain, as well as to improve the illumination of working surfaces from present light sources.

The new product can be supplied to refinish present furniture and equipment to match the new post-war Remington Rand files, furniture and other office equipment.

GENERAL NEWS

A.A.R. Pamphlet Raps Mississippi Subsidies

Summary of research group's report calls for correction of "inequalities"

Four recommendations, the adoption of which would correct "some of the inequalities of treatment at the hands of government between the railroads and water carriers," are made by the Association of American Railroads in a recently-issued pamphlet entitled "What Do You Get for Your Billions?" The recommendations call for the collection of "reasonable" charges for the use of navigable inland waterways improved at public expense; elimination of exemptions in the Interstate Commerce Act's Part III to bring within the jurisdiction of the Interstate Commerce Commission "all transportation for hire on the inland waterways"; requirement by law that the I. C. C. shall pass upon "the economic soundness, in the public interest," of proposed construction of new waterways and improvements of existing waterways; and withdrawal by the federal government from the barge-line operations it is conducting through the Inland Waterways Corporation.

The pamphlet says that the information it contains is "basically a summarization" of the more extensive presentation of the subject in the report on "Transportation on the Mississippi River System" of the Water Transport Subcommittee, Railway Committee for the Study of Transportation. The latter is part of the research group sponsored by the A. A. R., which has been functioning for the past four years under the general chairmanship of A. A. R. President R. V. Fletcher, formerly vice-president—research.

An "Illusion"—Noting at the outset that "the basis of American industry is common carrier transportation by rail," the pamphlet goes on to stress the "genuine interest" which commerce, industry and agriculture has in "the maintenance of railroad traffic at economic volumes." And yet, "in the illusory pursuit of 'cheap transportation' for some—no matter what it costs the taxpayers—our nation has followed policies which diminish the volume of rail traffic; which divert freight from common carriers to private carriers; and which add both to the tax bill and the real and actual cost of transportation for most shippers and especially small shippers."

The cost to date of the construction, improvement, and maintenance of the Mississippi River system for navigation is put at \$1,200,000,000 of the taxpayers' money, the "overwhelmingly greater part" having

been spent since 1921. The pamphlet then proceeds to dispose of the "three assumptions" on which such expenditures have been based: (1) That river transportation is inherently "cheap"; (2) that such "cheap transportation" is automatically good for the country, and especially for small business and farmers; and (3) that river transportation would be needed in case of national emergency to relieve the railroads of burdens which, specially in time of war, they could not carry.

The first of the foregoing is disposed of in a discussion of "The High Cost of 'Cheap Water Transportation.'" There are presented figures which show that the cost per mile of improving various parts of the Mississippi system, where no flood-control costs were involved, have ranged from \$173,566 for the Illinois Waterway to \$353,627 for that section of the Mississippi from the mouth of the Missouri to the mouth of the Ohio. These costs are based on river mileages whereas the pamphlet asserts that shipping distances for freight "are properly measured by the more direct routes and shorter mileages of rail transportation between the same points." It goes on to suggest that on the basis of "actual, efficient shipping distance," there should be added to the figures per mile by water approximately 50 per cent.

"Thus," the pamphlet continues, "costs of the Ohio river between Pittsburgh and Cairo, if calculated on the rail-line distance rather than the river distance would not be \$231,000 per mile but \$347,000 per mile. And likewise with the Missouri river between Kansas City and St. Louis, which would be not \$275,000 but \$413,000. In contrast, the investment in railroad roadway, tracks, bridges, and other fixed facilities average about \$80,000 a mile."

Taxpayers' Contribution—Likewise, on the basis of ton-miles, the pamphlet presents, from reports of the former Board of Investigation and Research, figures which show that the "taxpayer's contribution" to the transportation costs of users of the Mississippi system have ranged from 0.9 mills per ton-mile on the Monongahela to 107.8 mills on the Missouri from Kansas City to the mouth. During the same period the "total charge" for rail transportation in the United States averaged "less than one cent."

"Adding 50 per cent to the subsidies per ton-mile, by reason of the circuitry of river distances as compared with rail-line distances, it is seen that the taxpayers' contribution to the movement of freight on segments of the Mississippi River system is more than the total average charge for rail transportation," the pamphlet adds. "It is clear, then, that when all costs are considered . . . most Mississippi river transportation is not cheap at all. On the contrary, it is almost fantastically expensive."

(Continued on page 375)

Car Service Division Makes Annual Report

Recalls its recommendation that 1946 orders be placed for 107,298 freight cars

Freight car ownership studies made early last year by the Car Service Division, Association of American Railroads, resulted in a March 4, 1946, recommendation that A. A. R. member roads place orders for 91,235 cars in addition to the 37,162 on order January 1, 1946, and the 16,063 which roads responding to a C. S. D. questionnaire reported that they contemplated ordering. This was revealed in the division's annual report which went on to state that further consideration of the matter, at the request of the A. A. R. board of directors, resulted on July 16, 1946, in "a suggested allocation between railroads of 50,000 box cars to be ordered immediately, with a further suggestion of 21,550 cars which it was recommended should be provided for service not later than October 1, 1947, in order to secure a reasonably adequate box car supply in that year."

The suggested allocation of the 50,000 box cars was made, and the division reported that "tentative acceptances were received for 33,000," and up to September 1, 1946, "specific orders" had been placed for 9,100. This, as the report calculated it, left "a balance of 23,900 cars compared with acceptances, and 40,900 as compared with the original recommendation of 50,000 cars." If the division's earlier recommendation of March 4, 1946, had been carried out, the 1946 freight-car orders of the railroads would have totaled 107,298 cars, whereas the actual total was 43,325 as reported in the *Railway Age* of January 4, page 102. The latest A. A. R. report showed that the Class I roads on January 1 had 63,829 new freight cars on order.

Larger Orders Urged—"Events subsequent to the transmission of the original recommendation," the C. S. D. report said, "have confirmed the probable need for the additional cars suggested. The current heavy deficiency in car supply . . . and the necessity of heavy retirements which are currently at an increasing rate, justify serious consideration to the placement of additional orders for freight cars, particularly box cars." The report, submitted by C. S. D. Chairman Warren C. Kendall, is dated December, 1946, but data through September, 1946, are the latest included in discussions of specific figures.

In his foreword, Mr. Kendall stressed the difficulties of the year under review, noting that the "battle of transportation" did not end with V-J Day. In the first post-war year, the railroads saw "times

more hectic than any which existed during the war," he said as he proceeded to mention the "widespread strikes," including the nationwide railroad tie-up of last May. Mr. Kendall conceded that, when his report was being prepared, daily car shortages were of "serious proportions" for the first time since 1922—"although they fall far short of the shortages which existed in the years following the conclusion of World War I." The report, as he put it, was "prepared as usual on the basis that the facts should be told and that in so doing the war-time laurels won by the railroads will in no sense be dislodged."

The brief account of C. S. D. accomplishments in 1946 discussed the orders issued to require empty car movements in the undertaking "to equalize the car shortage as between the different sections of the country and the different railroads." Reports indicated to Mr. Kendall that this goal "has been, and is being, met, and shippers in the West are, on the whole, faring as well as those in the East and South." He added that if no orders as to the distribution of cars had been issued, the shortage in the West would have been "much more serious."

Program for 1947—"It is undoubtedly no exaggeration to say under present difficult conditions that if the railroads did not have an organization such as the Car Service Division to supervise the country-wide handling of freight cars, some means would have to be found to accomplish the same, or a similar, result," the report continued. "This might very well be the establishment of a government agency with full authority to control the distribution and handling of the nation's freight car supply. Under such conditions the benefits accruing to the railroads, by having this controlled by their own organization, might be lost. Such benefits include flexibility in the administration and carrying out of orders, the possibility of quick changes in orders when conditions warrant, and the approach to the problem through cooperation, rather than government order."

For 1947, the division has programmed work which will include continued supervision of the country-wide handling of freight cars, and studies and investigations with a view to removing "all possible car delays for which railroads are responsible." Also, railroads "will be urged to increase the supply of available cars by purchase of new equipment and by reduction of the number of bad order cars, if possible, to the low level maintained during the war." And shippers and receivers will be urged to contribute to efficiency of car handling by prompt loading and unloading, heavier loading, and cleaning of cars.

Much of the remainder of the report was devoted to detailed discussions of freight-car conditions by types of cars, but later developments in that connection have been recorded in Mr. Kendall's monthly reviews of the "National Transportation Situation," the latest of which was noted in the *Railway Age* of January 25, page 237. Meanwhile, the annual report's comment on the work of the division's Military Transportation Section noted that this section now faces the job of arranging for the movement of bodies of the war dead being brought to this country for final burial.

Tentative plans indicated that this movement would get under way early this year, and that the bodies will be moved from ports of debarkation in government-owned funeral cars to designated distribution points. From the latter the bodies will be moved individually to their ultimate destination. Present estimates are that 250,000 bodies will be returned to this country for final burial.

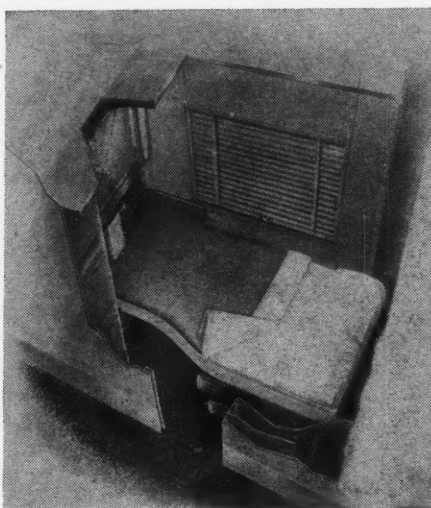
No Port Tie-ups—Mr. Kendall's review of the Port Traffic Section's activities reported that all ports had been free from congestion at all times during the year. His comment on activities of the Regional Shippers Advisory Boards recalled that this cooperative set-up was created in 1923 "in a period of transportation chaos," and it added that there is now "greater need than ever for the greatest degree of continued cooperation in the interest of both the shipping-receiving public and railroads."

Among other matters discussed in the report was the loading of cars with contaminating commodities about which complaints "have continuously been made by car owners." In this connection, the division is giving consideration to the adoption of a car service rule "under which a suitable penalty charge may be collected by the owner from railroads permitting violations of Circular T-56." As to Interstate Commerce Commission service orders, the division reported that the commission issued nearly three times as many in the first nine months of 1946 as it did during the 22-year period prior to 1942, and more than twice the average number issued in each of the war years. The majority of the 1946 service orders required the unloading of cars by railroads in instances where consignees were unable or unwilling to unload promptly.

Budd Designs New Sleeping Car Accommodations

The Budd Company has announced a new design for single-occupancy room-type sleeping car accommodations constructed so a passenger can lower his berth into position without stepping into the corridor or requiring the assistance of a porter.

During the day the cabin is equipped with a sofa-type seat and the berth is concealed in the wall behind the seat. Turning a



handle releases two safety catches and the counterbalanced berth is lowered into a horizontal position. The pre-made bed is sealed by a zipper-opened bedspread to insure its remaining clean. A new development in lighting, it is explained, has been installed on both sides of the large mirror above the wash basin. Beams of light are directed by the use of special optical lenses in such a way as to illuminate both sides of the face of a person standing before the mirror.

Freight Car Loadings

Loadings of revenue freight for the week ended February 8 totaled 767,481 cars, the Association of American Railroads announced on February 13. This was a decrease of 67,570 cars, or 8.1 per cent, below the previous week, an increase of 54,241 cars, or 7.6 per cent, above the corresponding week last year, and an increase of 11,649 cars, or 1.5 per cent, above the comparable 1945 week.

Loading of revenue freight for the week ended February 1 totaled 835,051 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, February 1			
District	1947	1946	1945
Eastern	164,534	141,333	131,431
Allegheny	181,555	129,240	146,597
Pocahontas	65,894	56,292	53,222
Southern	144,408	130,655	126,251
Northwestern ..	81,625	81,180	83,823
Central Western	130,125	123,748	126,231
Southwestern ..	66,910	60,853	72,001
Total Western Districts	278,660	265,781	282,055
Total All Roads	835,051	723,301	739,556
Commodities:			
Grain and grain products	53,664	54,398	41,776
Livestock	11,744	19,189	13,996
Coal	198,310	187,880	157,806
Coke	14,635	7,506	14,255
Forest products ..	50,813	36,368	43,442
Ore	12,900	5,985	10,215
Merchandise l.c.l.	119,081	118,788	93,836
Miscellaneous ..	373,904	293,187	364,170
February 1	835,051	723,301	739,556
January 25	821,964	708,554	759,625
January 18	828,060	749,443	777,572
January 11	830,945	772,888	783,060
January 4	687,428	652,978	683,398
Cumulative total, 5 weeks	4,003,448	3,607,164	3,743,211

In Canada.—Car loadings for the week ended February 1 totaled 69,945 cars, as compared to 70,502 cars for the previous week and 64,593 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
February 1, 1947 ...	69,945	39,116
February 2, 1946 ...	64,593	33,597
Cumulative totals for Canada:		
February 1, 1947 ...	334,015	177,631
February 2, 1946 ...	319,110	164,927

I. C. Safety Film Wins Acclaim

A two-minute safety film—"Shortcuts to Danger"—produced by the Illinois Central at Fort Dodge, Iowa, as part of a safety campaign in that area, is now being shown widely in theatres throughout Iowa, the road has announced. The picture, illustrating the hazards of trespassing, was seen

by a total of 19,000 persons during a week's campaign against accidents at Fort Dodge, where trespassing dangers on the road are particularly acute. More than 1,000 children viewed the film in a special showing, accompanied by a talk by Sid Law, I. C. traveling engineer assigned to safety.

Lays Car Shortage to Failure of Allocation Authorities

The box car shortage, now being highlighted at Senate interstate and foreign commerce committee hearings, "dates back to the failure of government officials controlling the allocation of critical materials during and since the war to recognize the serious need for more transportation equipment," said an item in the February 7 issue of "Business Action," a publication of the Chamber of Commerce of the United States. The item also recalled that the present trouble "has long been predicted by O. D. T. Director J. M. Johnson and others."

"A recently promised program for allocation of materials for 7,000 new cars of all types a month has been only half met," the chamber continued. And it went on to urge shippers and consignees to continue intensive conservation measures, "especially loading and unloading cars promptly and fully."

December Truck Traffic

Motor carriers reporting to the American Trucking Associations transported in December, 1946, 1,868,807 tons of freight, a decrease of 1.6 per cent under the 1,898,469 tons transported in November, 1946, but an increase of 32.4 per cent over the December, 1945, total of 1,411,873 tons. The A. T. A. index, based on the 1938-40 average monthly tonnage of the reporting carriers, was 189, the highest it has been for any December since 1942, while the month's volume surpassed all previous December totals on record.

The December figures, according to the A. T. A., are based on comparable reports from 185 carriers in 33 states. Carriers in the Eastern district reported a tonnage decrease of 1.7 per cent below November, 1946, but an increase of 36.7 per cent over December, 1945; carriers in the Southern region reported a decrease of 0.7 per cent below November, 1946, but an increase of 30.4 per cent over December, 1945, while Western district carriers reported a decrease of 1.6 per cent under November, 1946, but an increase of 24.4 per cent over December, 1945.

Chesapeake & Ohio to Test Car Heating Systems

In the process of selecting the heating system for the 284 passenger cars now on order with the Pullman-Standard Car Manufacturing Company the Chesapeake & Ohio has arranged for a directly comparative test of two heating systems. C. & O. passenger car built in 1941 is being fitted for the test by Pullman-Standard. In one half of the car will be installed the Vapor heating system of the Vapor Car Heating Company, utilizing a newly developed cycle-modulation control which controls the physical temperature of the piping it-

self and avoids under-runs and over-runs of heating cycles.

The other half of the car will be fitted with the electronic air-conditioning control of the Minneapolis-Honeywell Regulator Company in which, aside from the employment of a Wheatstone-bridge type of temperature control, is included a heat exchanger from which heat of the steam is transferred to a non-freezing liquid which is pumped through the radiators. This makes it possible to have the heating surface at a temperature only high enough to compensate for the heat lost through the walls of the car.

Both systems will be employed to furnish heat through radiant side-wall panels and radiant floors. Decision as to the heating equipment to be selected for the new passenger rolling stock will depend upon the performance of the two types during the test. The overhead heating arrangements will follow regular practice except for the controls.

T. & P. Begins Teletype Service

Direct teletype service has been inaugurated between the general offices of the Texas & Pacific at Dallas, Tex., and its general freight and passenger offices in 10 major cities, the road announced last week. W. A. Roberts, superintendent of telegraph, said the new service will make possible fast and frequent clearing of information on shipments to and from the following points: New York; Chicago; Pittsburgh, Pa.; Cincinnati, Ohio; Detroit, Mich.; Atlanta, Ga.; Birmingham, Ala.; Phoenix, Ariz.; Los Angeles, Cal.; and San Francisco.

Chilean State Railways to Expand

Plans for the extension of the Chilean State Railways call for laying heavier rail, enlargement of shops, installation of new signaling, and the purchase of new locomotives and equipment, according to an article in a recent issue of Foreign Commerce Weekly, a publication of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce.

Parts of the Chilean system, the article said, will be double-tracked and parts will be three-tracked. To move the freight traffic with present equipment involves the violation of safety practices and equipment is continually being overloaded. With the exception of private industrial railways owned by large mining companies, it is estimated that 60 per cent of the Chilean rolling stock is obsolete and should be replaced.

The State railways are expected eventually to electrify the entire main line, a distance of 662 miles. To make this possible foreign capital will be needed, because the State railways have been operating at a loss for several years. The purchase of 14 electric locomotives is planned by the State railways for the Santiago-Valparaiso line, 4 of which will be for heavy freight service, 4 for light road service, and 6 for use in switching and yard service. There are no builders of complete railway equipment in Chile, the article added, but there are several assemblers of freight equipment working partly with imported parts. Timber is available locally,

but it is necessary to import steel car frames, axles, wheels, plates, angles and similar items, as well as all track and right-of-way material. Most of the imports in recent years, the article stated, have been for repair purposes, but imports for new construction are planned for the immediate future.

R. I. S. P. Streamliner to Be Named "Golden Rocket"

"Golden Rocket" will be the name of the new \$1,500,000 streamliner to begin operation this summer on a 39¼ hr. schedule between Chicago and Los Angeles, Cal., by the Chicago, Rock Island & Pacific and the Southern Pacific, the two lines announced this week. (For details of the train see *Railway Age* of December 7, 1946, page 968).

The equipment, now under construction by the Pullman-Standard Car Manufacturing Company, will be the first entirely new post-war train operated between Chicago and the resorts of Arizona and California, according to an announcement by the roads. It will be operated tri-weekly on an extra fare basis, following the "Golden State route."

Club Meetings

W. G. Vollmer, president of the Texas & Pacific at Dallas, Tex., will address the Western Railway Club at its dinner meeting on February 17, at the Sherman hotel, Chicago. His subject will be "The Railroads Have a Story to Tell."

The speaker at the February 20 meeting of the New York Railroad Club will be Laurence F. Whittemore, president of the Federal Reserve Bank of Boston, Mass., whose subject is "The Future—a Challenge to Railroad Management." A 25-minute motion picture in color, "The Modern Coal-Burning Steam Locomotive," will be shown by courtesy of the Norfolk & Western.

British Road Tests Efficiency of Information Staff

Results of tests by the London & North Eastern (England) to determine the quality of service being offered to persons making inquiries at the road's King's Cross and Liverpool streets (London) passenger "inquiry offices" indicated that such requests are generally well handled by employees, the road has reported.

The testing involved the cooperation of a few selected patrons, who were invited to make test inquiries in person or by telephone at times and dates chosen by themselves and to report the results. The scheme was explained to the staffs of the information offices, who were told that results would be transmitted to them as received and that, whether results were good or bad, no attempt would be made to identify the individual who had dealt with any particular test inquiry. The persons making the survey of course were not known to the employees.

In all, 46 tests were made and rating forms were submitted over a period of nine months. To round off the experiment, statements showing the summarized results of all tests were sent to each member of the staffs in the two offices, together with a note reminding them of the object of the

tests and telling them that at the end of the first phase of the experiment their representatives would be introduced to the testers. At this meeting, it was agreed that both initial objectives had been achieved: The customers had confirmed the general excellence of the service and 82 per cent of the staff had voiced the opinion that the scheme was either interesting, encouraging or valuable.

New I. C. Streamliner Between Chicago and Waterloo, Iowa

A new five-car streamlined train of the Illinois Central began service on February 12 between Waterloo, Iowa, and Chicago, becoming the first of the I. C.'s new post-war trains to go into operation. The streamliner maintains the same schedule as its predecessor, and retains the same name—"Land O'Corn." It completes a round-trip daily between the two cities, leaving Waterloo at 6:45 a.m. and arriving at Chicago at 12:15 p.m. It leaves Chicago on the return trip at 4:30 p.m., with arrival at Waterloo at 9:55 p.m.

The new equipment consists of four streamlined coaches and a diner-lounge, powered by a Diesel-electric locomotive. The coaches, built by the Pullman-Standard Manufacturing Company, each have reclining seats to accommodate 56 passengers. The diner-lounge was built at the road's Chicago shops and the locomotive by the Electro-Motive Division of General Motors Corporation.

A. A. R. Pamphlet Raps Mississippi Subsidies

(Continued from page 372)

As to "Who Gets These Free Rides?" the pamphlet reports that, during the 1941-43 period, only 21 per cent of the total tonnage transported on the Mississippi system as a whole was moved by regulated public carriers; and the percentage moved by common carriers, "though not exactly determinable, was still smaller." Meanwhile, private and unregulated carriers transported "more than three-fourths" of the tonnage. Yet, "it is to the common carriers that small shippers must look for their transportation service."

Operators of the private carriers are identified as industrial concerns, including some of the country's "major industries," and thus the contributions from taxpayers of the whole country "are given as a pure subsidy to the relatively few large concerns which are in a position to make use of them." Moreover, "there is no evidence that the general public receives in the form of lower prices for the goods thus transported any return for its tax contributions."

Injury to Public—"The injury to the general public through the diversion of huge volumes of traffic tonnage to private and other carriers operating on free channels takes several forms," the pamphlet next explains. "Railway transportation can be produced most efficiently when the plant is operated at close to its capacity. The loss by the railroads of many millions of tons of freight yearly through the advantages enjoyed by those able to use free waterways is a great handicap to such operation, to the detriment of the much greater number who depend upon the railroads."

The third "assumption" to the effect that

the waterways would be needed to relieve the railroads in times of national emergency is easily disposed of by a brief account of how the railroads relieved the waterways during the war period.

"It is an astonishing fact," the pamphlet says, "that the regulated carriers on the Mississippi River system actually handled a smaller volume of freight in 1943 than in 1941. The private and other non-regulated carriers did a little better; their tonnage in 1943 was slightly more than 2 per cent in excess of 1941. By contrast, the freight tonnage of the Class I railroads increased from 1941 to 1943 by 20 per cent. The corresponding increase for the group of railroads most affected in peacetime by the competition of river carriers was 40 per cent. Nor was there any material change in these relative gains in tonnage in the subsequent years of the war—demonstrating quite clearly who relieved whom under pressure of the wartime transportation needs of the country."

Fair Describes Fundamentals of Purchasing

Four fundamentals of purchasing—visualizing the item to be purchased, estimating its basic worth, a knowledge of the sources of supply and the intelligent use of price information—were enumerated and discussed by J. S. Fair, Jr., purchasing agent of the Pennsylvania, in an address at a meeting of the New England Railroad Club in the Hotel Vendome, Boston, Mass., on February 11.

If the first three fundamentals have been followed, Mr. Fair said, a purchasing agent will have the correct information and data with which to proceed into the fourth step, which is the most important. As a result of visualizing the item he will have an excellent idea of the kind of shops which can turn it out. His estimate of its basic worth gives him a measure of the prices bid. A real knowledge of the sources of supply can assure him that orders are placed with companies which can meet his requirements as to quality, tells him whether bids are sound and who among the

bidders can make the necessary delivery. The last fundamental results in a purchase which is most favorable to the buyer.

"The intelligent use of price information entails not only the handling of the price information at hand," Mr. Fair continued, "it includes a broader use of the data in cooperation with the other departments of the purchasing agent's company. Perhaps the specification is such that extra work is involved for the manufacturer and, consequently, the material is priced at a higher figure than that of a standard product. There may be more favorable terms if the material is ordered in larger quantities and these larger quantities can perhaps be reached by the buyer if he orders on a quarterly rather than a monthly basis. In this case, of course, the saving in value of material must be balanced against the expense of short-time higher inventory. One or more bidders may offer substitutes and it must be ascertained whether the new materials are satisfactory. If they are, an entirely new list of possible sources may open up and the old sources must not be overlooked as potential suppliers of the new material."

The skill and interest of suppliers, Mr. Fair concluded, compose a vitally important factor in the outstanding performance of the railroads in emergency and in their achievement of a better service for the public. With the suppliers' continued assistance, the railroad industry, after more than 100 years of progress, can summarize its present position with Churchill's famous expression, this is just "the end of the beginning."

A.S.T.M. Symposium to Discuss Paint Problems

The 1947 spring meeting of the American Society for Testing Materials will feature a symposium on paint and paint materials which will be held on February 25 in the Benjamin Franklin Hotel, Philadelphia, Pa.

A list of current publications appears on page 394.



"Hoosier Belle" Christened at French Lick, Ind.

The practice of naming individual locomotives has been resumed by the Chicago, Indianapolis & Louisville, which on February 15 christened a new 1,500-hp. Diesel-electric, built by the American Locomotive Company and General Electric Company, for passenger service between Bloomington, Ind., and French Lick.

With the Government Agencies

Bigger Youngstown Canal Plan Hatched

Army gives new impetus to river-to-lakes ship canal plan for steel area

The perennial Ohio River-to-Great Lakes canal scheme, which has raised its head periodically in the Pittsburgh (Pa.)-Youngstown (Ohio) steel district, has again come up for argument. On February 7 the Army's Corps of Engineers opened a public hearing in Pittsburgh on the project, and, on February 11, the Buffalo (N. Y.) district engineer opened a hearing at Ashtabula, Ohio.

Known in former periods of promotion as the Beaver-Mahoning canal, the waterway project was dropped temporarily in 1939 after the Interstate Commerce Commission reported adversely upon its economic consequences. (See *Railway Age* for February 3, 1940, page 245). Then, by a House resolution introduced by M. J. Kirwan, congressman from Youngstown, Ohio, on July 20, 1946, the Army was directed to review the findings of the Board of Engineers for Rivers and Harbors published in 1939 (House Document No. 178, 76th Cong., 1st Sess.) "with a view to determining the current estimate of the costs and benefits for the route recommended in the said report, and including consideration with a view to determining for the same route the advisability of providing a project depth suitable for both lake and river traffic."

For Lake Vessels—While the directive does not state such particulars as depth and dimension of craft for which the canal would be designed, it is noteworthy that "lake traffic" as well as river traffic is mentioned therein, as compared with barge traffic only in previous considerations of the project. It is understood also that Col. W. E. Lorence, district engineer at Pittsburgh, informally favors a canal of sufficient depth to handle lake vessels.

The canal between Pittsburgh (on the Ohio river) and Ashtabula (on Lake Erie) projected in the 1939 report under review was to be 105 mi. long. The major waterway improvements contemplated were a total of 14 locks—three on the Beaver river, 5 on the Mahoning river and 6 on the slope to Lake Erie—a 30-mi.-long lake to be formed in the valley of the Grand river; and a new harbor at the mouth of Wheeler creek, west of Ashtabula.

The proponents of the canal consist principally of business interests of Youngstown, whose main concern is to force a reduction of rates on coal to that steel center from the Pittsburgh and West Virginia producing areas which is now received all-rail or

water-rail. Opposition thereto is led by the Upper Ohio Valley Association, founded in 1935, and composed of 538 industries and organizations, including steel manufacturers, coal producers, civic interests, railroads and railroad unions.

Superfluous and Costly—Two railroad officers presented statements of opposition at the Pittsburgh hearing. John A. Appleton, vice-president of the Central region of the Pennsylvania, contended, among other things, that the district is already served adequately by the existing railroad net; that proponents of the canal have never held that existing railroad service in the area is inadequate; that freight rates applicable thereto are reasonable and approved by the I.C.C.; that, if the canal carries the tonnage claimed for it, the railroads would have to scrap enormous investments in road and terminal bulk-handling facilities; and that it would "provide a toll-free waterway for a few industries at the expense of the taxpayers of the nation, and would create an extremely dangerous precedent."

C. M. Yohe, vice-president of the Pittsburgh & Lake Erie (New York Central System) pointed out that the transportation of iron ore from Lake Erie to consuming points in its territory produced 9 per cent of the operating revenue of his road and the transportation of bituminous coal, 32 per cent. He argued that construction of the canal "means imply a duplication of transportation facilities which are already more than adequate," and that "if this canal project were a scheme to build an additional railroad in the territory . . . the I.C.C., under the terms of the transportation laws, would undoubtedly refuse to permit it."

Further Hearing in Temperature Control Services Case

The Interstate Commerce Commission has reopened for further hearing the No. 20769 proceeding wherein its prior report of April, 1945, ordered railroads to provide carriers' protective services (i. e., temperature-control services) to perishable freight against cold within the area east of the so-called heater territory's eastern boundary, which is approximately the Illinois-Indiana state line. A previous reopening of the case had been for the purpose of prescribing the services after the railroads had failed, within the specified six months, to comply with the April, 1945, order; but the further hearing now ordered will consider again whether protective service in the East "is necessary or proper to secure safe transportation."

The eastern roads have established the services on potatoes, so the perishable traffic to be considered at the further hearing excludes potatoes, other than sweet potatoes or yams.

Freight Car Shortage Hearings to End Soon

Reed subcommittee continues investigation into lack of rail equipment

Warren C. Kendall, chairman of the Car Service Division of the Association of American Railroads, and other railroad officers were scheduled to testify before a subcommittee of the Senate committee on interstate and foreign commerce on February 13, as hearings on Senate Resolutions 44 and 47, pertaining to the investigations of the shortages of coal and box cars, respectively, headed toward a conclusion. Mr. Kendall was expected to reply to the allegations of shippers, among others, that the car service orders issued by the Interstate Commerce Commission and C. S. D. have caused a dislocation of freight cars.

Senate Resolution 47 was proposed by Senator Reed, Republican of Kansas, and chairman of the subcommittee, and Senate Resolution 44 was introduced by Senator Revercomb, Republican of West Virginia.

Colonel J. Monroe Johnson, director of the Office of Defense Transportation, continued his plea for additional freight cars on February 6 when he warned that "unless we secure more equipment in this country, it is quite possible that the entire economy will suffer." He said that a lack of rail equipment "can be, but should not be" an "effective brake upon our expanding industrial production."

Johnson Urges High Per Diem—Declaring that the shortage of coal cars is as "acute and critical" as the shortage of box cars, Colonel Johnson said that additional rail equipment must be built "at a sacrifice to other industries." He also asserted that a substantial increase of the \$1.15 per diem rate would decrease the dislocation of cars and promised to write a bill requiring an increase when Senator Reed offered to introduce such a measure. "If you raise the per diem, you'll load 942,000 cars monthly," he predicted.

Colonel Johnson also severely criticized the approval of priorities for steel and other commodities by the Civilian Production Administration Branch of the Office of Temporary Controls for the construction of 1,100 pressure tank cars used to move fertilizer to the west coast for shipment to Japan and Manchuria. "What have they been using for the last million years?" he asked, adding that the steel could have been used for the production of general-purpose freight cars. "It will be some time yet before you get 7,000 cars produced monthly," he continued, "and that will hold you where you are now."

The O. D. T. director also criticized Secretary of Interior J. M. Krug, charging that when Mr. Krug was head of the War Production Board, he failed to keep his promise to allocate steel and other materials for freight cars. At the same time, the O. D. T. director termed as "inexcusable" the increase in the number of bad order cars from 2 per cent during the war to 5 per cent at the present time.

Giving his views as to causes of the car shortage, J. C. Houston, Jr., deputy administrator of the C. P. A., said that: (1) The railroads did not maintain their rolling stock or make normal replacements during the 1930's; (2) during the war, available equipment was worn out by extra use and replacements were limited because of the scarcity of materials and military priorities; and (3) during the immediate post-war era, the reluctance of the railroads to place sufficient orders for new cars despite excessive freight shipments resulted in the car builders turning to export orders. Mr. Houston added that car builders felt that they did not want to "work themselves out of business" by "working off" the comparatively small number of domestic orders placed by the railroads during the latter part of 1945 and the early months of 1946.

Wheels a "Bottleneck"—"More steel than is being talked about in this 7,000-car program will be supplied before the year is out," Mr. Houston continued. He explained that the 7,000 car program is a "voluntary one" reached through an "understanding" with the steel industry. Mr. Houston also said that the "real bottleneck" in freight car production centers around the procurement of materials for component parts, particularly wheels. Replying to questions from members of the subcommittee, he said that the resumption of automobile production could be a reason why the railroad industry received only an estimated 7.2 per cent of the steel produced in the first half of 1946, as compared with approximately 9 per cent in the first half of 1945.

Major General P. B. Fleming, administrator of the O. T. C., expressed confidence that the joint C. P. A.-car builders' program will result in increased production, and at the same time alluded to the "infinitesimal knowledge" of Colonel Johnson.

He noted that many producers of freight car components, including the Westinghouse Air Brake Company, were having difficulty in procuring cast iron, which he said is used for the production of iron soil pipe, a vital commodity in the veterans' housing program.

Harold Stein, commissioner of War Mobilization and Reconversion, O. T. C., said that the O. W. M. R. has been aware "from the outset" of the serious problems involved in the shortage of freight cars. He added that the O. W. M. R. has worked with the O. D. T. and the C. P. A. since last summer on a program "to provide assistance to the railroads in minimizing the effects of the shortage—and eliminating it as promptly as the supply of steel and other critical materials permits," noting further that the O. W. M. R. has "specifically directed" a program to assist the railroads in obtaining supplies for the

Alabama Joins Georgia in Anti-Trust Case

The state of Alabama this week filed in the United States Supreme Court a motion for leave to intervene in Georgia's anti-trust suit against southern and eastern railroads which is now set for final argument before the Supreme Court's special master, Lloyd K. Garrison, at Washington, D. C., on April 1. Alabama's motion made no request for further hearing or the taking of additional testimony; it merely asked that the state be made a party plaintiff in support of Georgia's petition.

maintenance and repair of their rolling stock and for increasing the fleet of tank cars. "It was realized," he said, "that while the repair of rolling stock was the quickest way to alleviate the shortage, these programs must be supplemented by a program for building new freight cars." According to Mr. Stein, the repair and construction programs were initiated on an "urgency basis" last August following a series of meetings at the White House called by John R. Steelman, then director of the O. W. M. R.

Repairs Facilitated—"The repair program met with substantial success," he continued, "and shortly before the O. W. M. R. was transferred to the O. T. C., Mr. Steelman was informed that in November, 1946, there were 67,294 bad order cars awaiting repairs. This figure compared with 82,808 bad order cars awaiting repairs shortly before he directed that this program should receive assistance from the C. P. A. as a matter of urgency . . . In other words, the backlog had been reduced by 18 per cent from the time we began expediting materials for the repair shops. As a result of other O. W. M. R. action, directives were issued by the C. P. A. to steel producers to insure delivery of material for 530 tank cars before the end of 1946, and for an additional 665 tank cars to be delivered to the railroads before March 31, 1947."

Mr. Stein said that John D. Small, former C. P. A. administrator, did not feel that it was feasible to channel steel for the production of freight cars, it being more desirable to avoid wherever possible any disturbance to voluntary steel mill schedules and contractual arrangements between steel mills and their consumers.

Also asserting that the shortage of steel and the reluctance of car builders to expedite their delivery of equipment were among the principal reasons for the lack of new cars, Mr. Stein, added that approval of a plan proposed last summer wherein the Reconstruction Finance Corporation was to have financed the construction of 50,000 box cars was not favored because "it would have been necessary for the railroads to certify to the R. F. C. that they were unable to obtain financing elsewhere, and at that time . . . railroad equipment certificates were selling at the highest price in recent history."

"Even more important from the stand-

point of the O. W. M. R.," he continued, "was the fact that the backlog of domestic freight car orders was steadily mounting. Without R. F. C. financing, there are unfilled orders today for more than 75,000 domestic cars. The situation now is that the car manufacturers are ready to build and the railroads to buy all the cars for which materials can be obtained."

Pointing out that steel no longer is allocated for the production of freight cars for export and denying charges that the "administration" has favored the construction of cars for export at the expense of domestic needs, Mr. Stein concluded that the O. T. C. hopes to reach a production level of "at least 7,000 new cars for the first time in March," and "thereafter to increase production as the steel supplies permit."

Open Tops Scarce, Too—With respect to Senate Resolution 44, Senator Revercomb said he expected the hearings to produce evidence as to (1) whether there is a coal car shortage in the northern West Virginia mining areas served by the Baltimore & Ohio and the Monongahela; (2) whether or not there was shortage during World War II; and (3) why there is a shortage today if none existed during the war. Meanwhile, he noted that there has not been any complaint of a car shortage in the area served by the Western Maryland.

Requested to discuss this situation, Colonel Johnson noted first that the production of coal and the supply and distribution of coal cars in West Virginia are so closely allied to national production and supply and distribution of coal cars that it is impossible to disassociate one from the other, and that gondolas and hoppers are used for the transportation of many commodities other than coal. He then pointed out that the open-top-car supply, except during the coal strikes, has been acute in all parts of the country throughout the past year and has "prevailed so far this year."

Coal production, the O. D. T. director said, was at "record levels" during 1946 except during the two general bituminous coal strikes; and "had it not been for the fact that coal cars were idle for almost one-quarter of the past year, when the mines were shut down, I feel sure that the high weekly rate of production and rail loadings during other periods would have been much lower and the car supply much easier." Colonel Johnson added that the increase in "strip mining" in the northern West Virginia mines from approximately 1,000,000 tons in 1941 to nearly 12,000,000 tons in 1945 resulted in a "severe impact" upon the railroads, notably the B. & O., serving that area. To assist that road during 1944, he continued, the Chesapeake & Ohio, the Norfolk & Western and the Bessemer & Lake Erie made available 27,425 cars for one or two loadings. In 1945, this assistance amounted to 42,254 cars; in 1946, 13,942 cars. The drop in the number of cars made available in 1946 was due to the increasing needs for cars by the owning roads, the O. D. T. director explained.

"In addition to this assistance, the N. & W. leased 2,000 cars to the B. & O. during the latter part of 1944," he went on. "When

production capacity of the Southern fields started to increase, the N. & W. began to recall these cars. In December, 1945, 800 cars were returned. On January of this year, 500 more were recalled at the rate of 17 each day. This will leave 700 still on lease to the B. & O. after February 21. However, the Central of New Jersey has agreed to lease 1,400 cars to the B. & O. Some of these have already been made available."

B. & O.'s Situation—Colonel Johnson also explained that (1) the B. & O. has 4,000 coal cars on order, is now processing orders for an additional 4,000 and during January started to receive 15 new cars per day, which he said would offset those being returned to the N. & W.; (2) while loadings on the B. & O. increased 52.5 per cent in 1944, 48.4 per cent in 1945 and 25.5 per cent in 1946, cars owned and leased increased only 6.6 per cent, 11.2 per cent and 10.3 per cent, respectively; (3) the Western Maryland, which on January 1 had orders for 600 new cars, has been able to meet most of its requirements; (4) the Monongahela, which does not own any cars, has encountered difficulty securing equipment from its joint owners, the B. & O., the New York Central (Pittsburgh & Lake Erie) and the Pennsylvania; and (5) if the present rate of weekly loadings continues, deficiencies in open top equipment also are likely to continue because sufficient new equipment will not be available "for months to come."

"If we do not have any interruptions to production during 1947," he concluded, "all indications are that there will be a free coal market for the first time in years. If this turns out to be so, keen competition between coal districts and railroads will become evident. Under these conditions, if one road were required to make cars available to another when needed on their own lines, we would be interfering with free competition."

The B. & O.'s plight was summarized by C. W. Van Horn, vice-president, operating and maintenance, who told the committee that while the road's supply of coal cars was "more than sufficient" to handle the pre-war production on its lines, it has been unable to get the cars necessary to move the "greatly increased war-time production" due to the restrictions on the allocation of materials. He said that the "very heavy increase" in coal production on the B. & O.'s lines during the 1940-1946 period was the heaviest increase of any of the bituminous-carrying roads. He added that during the coal strikes in 1946 and the threatened strike in April "there have been and will continue to be unusual conditions and pressures in the coal business and in the transportation of coal."

Concentrated Increase—Mr. Van Horn also asserted that the B. & O. car supply "has been and is being distributed equally among the divisions of the entire system and, as to such divisions, among the coal operators located thereon. Thus, any car shortages on our lines are not matters peculiar to West Virginia, but are felt equally by the operators in all of the coal producing areas served by the B. & O." He stated further that 2,000 coal cars have been delivered to the B. & O. since the coal

strike of April, 1946, while orders are with the car builders for 8,000 more coal cars, 200 of which already have been delivered since January 13. The balance of 7,800 are to be delivered throughout 1947.

Captain H. H. Collisson, United States Naval Reserve, Coal Mines Administrator, Department of Interior, said that the coal car shortage on the B. & O. is one that "goes beyond a simple loss of required production," adding that "the unemployment and lack of profitable production within this relatively small area introduces an acute social problem." He made recommendations calling for the loan of ore cars by the B. & L. E. to the B. & O. during the winter season; a limitation to a 600-mile radius from the port on shipments of coal for export, and the loan of coal cars on a voluntary basis by other railroads to the B. & O. "to the extent possible without seriously affecting their own coal-carrying capacity."

C. P. Blair, superintendent of transportation of the N. & W., and A. T. Lowmaster, executive vice-president of the C. & O., expressed their disagreement with any suggestion that the situation on the B. & O. and other roads would be helped by a pool of cars among the railroads. Such a suggestion was made by C. F. Davis, president, District 31, United Mine Workers of America, who complained that the shortage of coal cars has led to "short work time" in the mines located on the B. & O. and Monongahela, and that wage losses to the miners in those areas have amounted to approximately \$250,000 per month.

"During the war when there was utmost pressure for maximum production, a pool was thought to be unwise and we think the accomplishments during the war period definitely show the wisdom of placing responsibility on the individual railroads to provide the transportation demanded of them," Mr. Blair said, "There exist today the same objections to pooling that caused this plan to be discarded under war conditions."

Among others who appealed to the subcommittee for relief in the northern West Virginia coal areas were G. S. Brackett, president of the Northern West Virginia Coal Association, Fairmont, W. Va.; T. T. Rees, president, Tioga Coal Corporation, Richmond, W. Va., and Dan H. Wheeler, Deputy Solid Fuels Administrator, Department of Interior. The latter, in a statement released February 11, disclosed that bituminous coal production for the week ending February 1 was estimated at 13,775,000 tons, the highest week's production since the week ending December 11, 1926.

Douglass Heads Panel

F. P. Douglass, chairman of the National Mediation Board, has been designated by President Truman as chairman also of the National Railway Labor Panel which the late President Roosevelt set up to provide war-time procedures whereby labor organizations could secure the appointment of emergency boards without threatening to strike. Mr. Douglass succeeds Harry H. Schwartz, who had held the panel chairmanship along with his membership on

N. M. B. during a term which expired February 1.

Meanwhile, Robert F. Cole, secretary of N. M. B., announced that Mr. Schwartz had retired from federal service under the provisions of the Civil Service Retirement Act; and that the former senator from Wyoming "will probably return to that state and resume the practice of law at Casper in the near future." Mr. Douglass remains the lone member of N. M. B., since President Truman has not yet filled the vacancies created by the retirements of Mr. Schwartz and George A. Cook, who left the board July 1, 1946.

Money for Retirement Board

President Truman has transmitted to Congress a supplemental budget estimate asking for the appropriation of an additional \$2,204,000 for the Railroad Retirement Board for the current fiscal year ending next June 30. The accompanying statement from the Bureau of the Budget explained that R. R. B. needed the money to take on the "increased work load" resulting from the enactment of the Crosser Act.

Overcharges by Truckers and Freight Forwarders

Senator Cordon, Republican of Oregon, has introduced S. 571 to amend the Interstate Commerce Act "so as to provide limitations on the time within which actions may be brought for the recovery of undercharges and overcharges by or against common carriers by motor vehicle and freight forwarders."

Road Fined \$2,000

Failure of the Terminal Railroad Association of St. Louis to unload 163 carloads of automobile bodies and parts at St. Louis, Mo., as required by the Interstate Commerce Commission's Service Order No. 453, resulted in that road being fined \$2,000 and costs on January 30, according to information received by I.C.C. Secretary W. P. Bartel.

The I.C.C. brought a civil action under the provisions of Section 1(17) of the Interstate Commerce Act, and the carrier confessed judgment in respect of certain shipments involved.

Milwaukee Fireman Awarded Medal of Honor

Upon recommendation of the Committee on Award of Medals of Honor, approved by the Interstate Commerce Commission, President Truman has bestowed a medal of honor on Wallace G. Johnson of Tacoma, Wash., a fireman employed by the Chicago, Milwaukee, St. Paul & Pacific. The award was based on Mr. Johnson's rescue of an elderly woman from a Milwaukee track upon which a switching movement was being made at Tacoma on February 7, 1946.

On that day Mr. Johnson was on a Diesel-electric switching locomotive which was hauling empty passenger cars out of Tacoma passenger station. As the locomotive approached East D street, he saw the woman about to cross the track in

front of the engine. He jumped from the moving locomotive, ran in front of it, grabbed the woman, and leaped clear of the approaching engine, and "barely escaped being struck by it," the commission's announcement of the award said. It added that Mr. Johnson had exhibited "extreme daring and greatly endangered his own life."

Mr. Johnson's medal was the fifty-eighth to be awarded under the Medals of Honor Act of February 23, 1905. The act provides for bronze medals of honor in recognition of outstanding feats of bravery connected with saving of life upon railroads.

C. N. J. Seeks I. C. C. Order on Jersey Commutation Fares

The Central of New Jersey has asked the Interstate Commerce Commission to institute an investigation into the refusal of the Board of Public Utility Commissioners of New Jersey to authorize increased intrastate commutation fares in line with the 20 per cent raise in interstate rates which became effective last May and June, as authorized by the commission. The petition asks that the investigation be with a view to issuance by the commission of a so-called section 13 order overriding the state board.

St. Louis-San Francisco Fined \$1,000 in Missouri Court

Use by the St. Louis-San Francisco of refrigerator cars for the transportation of empty beer containers without having first obtained authority resulted in a judgment of \$1,000 and costs against that road, it was announced this week by Secretary W. P. Bartel of the Interstate Commerce Commission. The fine was imposed January 28 in the federal district court at St. Louis, Mo. According to Secretary Bartel, authority to haul empty beer containers was required by Agent Taylor's Second Amended I. C. C. Order No. 413, which was issued pursuant to the I. C. C.'s Service Order No. 95. A civil suit was brought by the government against Frank A. Thompson, trustee of the road, under the provisions of Section 1(17) of the Interstate Commerce Act.

Court Review of I. C. C. Orders

Representative Michener, Republican of Michigan, who is chairman of the House committee on judiciary, has introduced H. R. 1468 "to provide for the review of certain orders of the Interstate Commerce Commission and the United States Maritime Commission and giving the United States courts of appeals jurisdiction on review to enjoin, set aside, or suspend such orders."

The proposed legislation, among other things, would provide that appeals from specified I. C. C. and M. C. orders would lie with the circuit court of appeals, thus eliminating the use of special three-judge federal courts. Moreover, appeals to the Supreme Court would require a writ of certiorari from that court, being no longer a matter of right.

A draft of the bill was sent to Congress

recently by Henry P. Chandler, director of the Administrative Office of the United States Courts, who said that the proposal grew out of a study made by the judicial conference of senior circuit judges in cooperation with representatives of the administrative agencies involved. Chairman Aitchison represented the I. C. C.

Would Alter Salary Provisions of Locomotive Inspection Act

Chairman White of the Senate committee on interstate and foreign commerce has introduced, "by request," a bill (S. 562) to amend the salary provisions of the Locomotive Inspection Act. The amendments would give the Interstate Commerce Commission authority to allocate the positions of director of locomotive inspection, assistant directors, and district inspectors to their proper civil-service grades and to fix the compensation "subject to the Classification Act of 1923." The act now names the salaries to be paid.

Allows More Time for Comment on Water-Regulation Report

The Interstate Commerce Commission has set back from March 1 until May 1 the deadline date for the submission of exceptions or comments with respect to the report on "Problems in the Regulation of Domestic Transportation by Water," which was issued recently as a result of the water-carrier study (now docketed as Ex Parte No. 165) launched by the commission in April, 1944. The report, which was reviewed in the *Railway Age* of January 18, page 201, was prepared by Dr. C. S. Morgan, chief carrier research analyst, of the commission's Bureau of Transport Economics and Statistics.

Reopen Case Involving Permits of Truckers Serving Packers

Division 5 of the Interstate Commerce Commission has reopened, for reconsideration on the record as made, the Ex Parte No. MC-38 proceeding which involves the modification of permits held by contract truckers serving meat-packing houses. In its prior report, noted in the *Railway Age* of January 12, 1946, page 163, the division found that the commission was without authority to broaden the permits on its own initiative, but it offered to do so upon written requests from contract truckers involved. The reopening came after the commission's consideration of the record and of various petitions, including those of railroads in Official Classification territory and the Western district.

3-Year Airport Program Would Cost \$985.8 Million

Acting in conformity with the Federal Aid Airport Act which requires the preparation and annual revision of a "national airport plan," the Civil Aeronautics Administration has issued a list of 4,431 "public" airports which it believes should be constructed or improved during the next three years. The whole program would cost an estimated \$985,800,000 of which the federal government would pay \$441,600,000

and state and other local sponsoring agencies \$544,200,000.

From the list will be selected projects to be included in the fiscal 1948 construction program, "depending on the amount of funds appropriated by Congress and the relative urgency of each project," the C. A. A. announcement said. The plan as now revised includes 417 large airports (those with paved runways 4,500 ft. or longer at sea level), 3,850 smaller airports, and 164 seaplane bases. The 417 large airports would cost a total of \$435,000,000, while the estimated cost of the 3,850 smaller projects is \$548,800,000. The seaplane bases would cost about \$2,000,000.

Of the 4,431 projects, 2,550 would be entirely new airports, while 1,881 "are existing public airports requiring improvement." Of the 417 large airports on which work is proposed, only 14 are new, the other 403 being existing facilities.

Registration of Lobbyists

The February 5 issue of the Congressional Record published registrations received during the fourth quarter of 1946 by the clerk of the House of Representatives and the secretary of the Senate under the provisions of the Regulation of Lobbying Act which was enacted last year as part of the law providing for the reorganization of congressional procedures. Registrations on the new list are in addition to those published in the Record's January 3 issue, as reported in the *Railway Age* of January 11, page 157.

Like the previous registrants, many of those on the fourth-quarter list reported addresses outside of Washington and stated that their legislative activities comprised only a part of their duties while the reported compensation covered all duties. The list, with the reported salaries, included the following:

Air Transport Association of America: Robert Ramspeck, \$25,000 per year.

American Waterway Operators, Inc.: Chester C. Thompson, \$18,000 per year.

Aitchison, Topeka & Santa Fe: James P. Reinhold, \$11,199.96 per year.

Brotherhood of Railroad Trainmen: G. W. Nelson, \$8,800 per year, and Harry See, \$14,800 per year.

Chesapeake & Ohio: Tom J. McGrath, dependent on time required with maximum of \$1,000 per month.

Intracoastal Canal Association of Louisiana and Texas: Dale Miller, \$6,000 per year.

Lake Carriers' Association: Gilbert R. Johnson, \$27 per day, L. C. Sabin, \$33 per day, Lyndon Spencer, \$33 per day, Alexander T. Wood, \$21 per day.

National Association of Motor Bus Operators: Jack Garrett Scott, annual retainer of \$18,000.

National Conference of Railroad Investors: Robert E. Smith, \$500 per month.

National Federation of American Shipping, Inc.: Maitland S. Pennington, \$12,500 per year.

National St. Lawrence Association: W. C. Cowling, no compensation, N. R. Danielian, monthly retainer of \$1,000.

New York State Conference in Opposition to the St. Lawrence Project: J. Cole Greenway and Carroll B. Huntress, no compensation.

Order of Railway Conductors: C. W. Vance, \$12 per day.

Protective Committee for Chicago, Rock Island & Pacific 7 Per Cent and 6 Per Cent Preferred Stock: Malcolm Mercartney, \$75 per week "as part of such reasonable compensation as the financial condition of the committee may ultimately warrant and the committee may allow."

Railway Employees Department, American Federation of Labor: R. R. Laugherty, \$6,000 per year.

Railway Labor Executives' Association: A. E.

Lyon, \$9,000 per year, and Schoene, Freehill, Kramer & Fanelli, \$100 per day.

Railroad Security Owners' Association: Harry E. Procter, \$8,000 per year for work in interest of this association and National Association of Mutual Savings Banks.

Seatrains Lines, Inc.: Frederick E. Brown, Wilbur LaRoe, Jr., and Arthur L. Winn, Jr., partners in Clark & LaRoe, which is paid an annual fee of \$7,500 for legislative work.

Spokane, Portland & Seattle, Southern Pacific, and Union Pacific: Harold J. Turner, no salary figure reported—receives annual salary for all work performed for three roads, but no "stated or determinable amount for services in connection with federal legislation."

Switchmen's Union of North America: T. L. Joyce, \$7,404 per year.

Tennessee Railroad Association: Bascom F. Jones, \$7,500 per year.

Upper Mississippi Waterway Association: Arthur D. Strong, \$275 per month.

Western Association of Railway Executives: Frank E. Haas, \$600 per month, and Joseph H. Hays, \$14,400 per year.

December Accident Statistics

The Interstate Commerce Commission has made public its Bureau of Transport Economics and Statistics' preliminary summary of steam railway accidents for December, 1946, and for that entire year. The compilation, which is subject to revision, follows:

Item	Month of December		12 months ended with December	
	1946	1945	1946	1945
Number of train accidents*	1,373	1,585	15,504	16,892
Number of casualties in train, train-service and nontrain accidents:				
Trespassers:				
Killed	127	90	1,556	1,536
Injured	96	55	1,164	1,164
Passengers on trains:				
(a) In train accidents*				
Killed	14	6	65	65
Injured	183	298	1,527	1,955
(b) In train-service accidents				
Killed	268	6	38	67
Injured	243	3,027	2,767	
Travelers not on trains:				
Killed			15	11
Injured	115	126	1,060	1,105
Employees on duty:				
Killed	65	98	673	892
Injured	3,311	4,320	38,313	47,285
All other nontrespassers**				
Killed	253	274	2,029	2,119
Injured	859	950	6,821	7,205
Total—All classes of persons:				
Killed	459	483	4,376	4,690
Injured	4,832	5,992	51,912	61,481

* Train accidents (mostly collisions and derailments) are distinguished from train-service accidents by the fact that the former cause damage of more than \$150 to railway property.

** Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties for all classes of persons, including both trespassers and nontrespassers, were as follows:

Persons:				
Killed	228	260	1,853	1,903
Injured	617	638	4,399	4,446

1940 Act "Wrote Finis" to All Land-Grant Claims

The Transportation Act of 1940's land-grant-rate-repeal provisions "wrote finis" to all land claims of railroads which accepted the relief by executing the required releases with respect to such claims against the government, the United States Supreme Court has ruled in upholding the Secretary of the Interior's refusal to consider Atchison, Topeka & Santa Fe claims for so-called "lieu" lands. The unanimous decision of the court, announced on February

3 by Justice Black, reversed the Circuit Court of Appeals for the District of Columbia, which had overruled a federal district court decision dismissing the Santa Fe suit.

The suit was based on the railroad's contention that the release it signed did not waive its lieu-land claims which arose by reason of settlement of homesteaders on lands granted to it after the grants were made. These claims were based on Congressional acts of 1874 and 1904, which provided that where settlers had occupied railroad-granted lands, the railroad could, upon relinquishment of title to such lands, select other lands in lieu of them. Meanwhile the Santa Fe conceded that its release did waive its so-called indemnity-land claims, based on that provision of its grant which stipulated that if the government, because of prior settlement by homesteaders, could not give possession of some of the lands granted, the railroad could select other public lands as an indemnity.

The railroad contended in effect that the release covered only claims "on account of" or "under any grant," whereas the lieu-land claims rested on "contractual exchanges of lands made under the acts of 1874 and 1904." The court rejected this contention, holding that the language of the required release was "not so narrow." It went on to quote, with its own emphasis, that part which required railroads to surrender claims for "compensation, or reimbursement on account of lands, or interest in lands, which have been granted, claimed to have been granted, or which it is claimed should have been granted . . . under any grant." The court read this language as indicating "a purpose of its draftsmen to utilize every term which could possibly be conceived to give the required release a scope so broad that it would put an end to future controversies, administrative difficulties, and claims growing out of land grants."

The Transportation Act of 1940 provision, which included the condition requiring this release of claims against the government, was only a partial repealer; it left land-grant rates on movements of military freight and personnel. Complete repeal was brought about by the Boren Act of December, 1945, which became effective October 1, 1946.

Retirement Plan Contributions Held Still Inadequate

The actuarial valuation of liabilities for employees and annuitants under the Railroad Retirement Act, exclusive of the new liabilities created by the amendment of July 31, 1946 (the Croser Act), was \$7,709,400,000 on December 31, 1944, according to the third report of the actuarial advisory committee of the Railroad Retirement Board, recently made available. (See the *Railway Age* for April 1, 1944, page 654, for a summary of the committee's second report.) To cover this liability, the committee said, there were funds in hand amounting to \$474,700,000, leaving a balance of \$7,234,700,000 to be covered by future contributions.

Rates Inadequate—Each of the three valuations, made at intervals as required

by statute, has shown that contribution rates under the act are inadequate, the committee continued. As of January 1, 1947, the total required rate of contribution, including an allowance of 3.50 per cent for the additional obligations under the 1946 amendment, will be 12.63 per cent of payroll (assuming it to be \$3,500,000,000) compared with the actual step-rate taxes equal to about 12.39 per cent of payroll effective from that date.

In fixing the required rate of contribution, the assumption has been made that each year contributions are required (1) to meet the normal, accruing cost and (2) to meet the interest accruing on the part of the unfunded liabilities not covered by future normal contributions, the committee went on. For example, it said, in the first valuation the liability for benefits in excess of those covered by the normal contribution rate of 5.591 per cent of the payroll was \$3,389,095,264. To cover interest on this sum at the valuation rate of 3 per cent required an annual payment of \$101,672,858, which was equivalent to 5.084 per cent of the payroll then assumed to average \$2,000,000,000 each year. These percentages, plus an expense charge of 0.125 per cent, resulted in a total indicated contribution of 10.80 per cent of payroll.

The latest valuation report indicates an unfunded accrued liability of \$4,331,020,000, compared with the initial liability of \$3,389,095,264. Interest at the valuation rate on this amount is approximately \$129,900,000 a year. The percentage contribution needed to provide this interest depends directly on the assumed payroll, which results in an element of uncertainty.

An annual payroll of \$2,000,000,000 was assumed in the first valuation, the committee said, and in the second valuation the assumed payroll was \$2,500,000,000. The latest report assumes a payroll of \$3,500,000,000. If it is concluded, however, that an assumption of \$3,000,000,000 is a more reasonable estimate for the future payroll, the total required rate of contribution would be 13.29 per cent.

The committee called attention to the fact that the estimates are based on the assumption that the initial funded liability and any increases therein will be covered only by the payment of interest in perpetuity. It has been noted, for example, that the unfunded liabilities for prior service have increased from about \$3,389,000,000, as shown in the first valuation, to about \$4,331,000,000 in the latest valuation. The increase between the first and second valuations was approximately \$230,000,000 and the increase between the second and third was \$712,000,000.

Basis Not Sound—Under a typical staff retirement fund, an attempt usually is made to liquidate gradually the initial unfunded prior service liability. If it is assumed that no attempt is to be made to amortize the initial liability, but that it should not be permitted to increase, then provision must be made for the amortization of any increase in the unfunded liability. The typical retirement system, the committee said, does not permit deficits to develop from year to year and then assume they will never be funded.

When the second valuation showed an increase in the unfunded liability, the committee concluded, there was some thought that, because of the inadequacy of the original records as to prior service credits, the increase did not indicate the need to question the method of funding the liabilities. However, the increase of approximately \$712,000,000 since the second valuation indicates that a question should be raised as to the propriety of including in the calculation of the contribution rate only an annual interest payment on increases over the original unfunded liability. The committee believes that the railroads and the employees should not lose sight of the fact that until revenues are adjusted so as to hold the unfunded liability at least in check, the future of the system is not on a conservative financial basis.

Rate Boost Effect on Business Costs "Relatively Small"

The Ex Parte 162 increases in railroad freight rates which became effective January 1 "will have a relatively small effect upon total production and distribution costs since transportation costs constitute only a small part of the delivered prices of most commodities," the Department of Commerce's Transportation Division said in an article discussing the increase which appeared in the January issue of the department's "Survey of Current Business." The article as a whole was a detailed analysis of the Interstate Commerce Commission's decision and its implications, including comment on prospects for diversion of some business to motor trucks.

"On cotton," the discussion of the effect on business costs said "the increased rate on the raw material and the finished textiles together will probably add less than one cent to the retail cost of a shirt. The increase on wool and on woolen manufactures will add very little to the retail cost of a wool suit.

"The increases for agricultural commodities will not in general effect any great change in the cost of production or the cost to the consumer. The additional cost in New York of a can of fruit or vegetables shipped from California will be less than 1/4 of a cent. Ten pounds of potatoes shipped from Maine to New York will cost 1 cent more. Ten pounds of oranges shipped from Florida to Pittsburgh will cost about 1 1/2 cents more.

"The additional charges on manufactured commodities also will be small in comparison with the value of the finished product. On automobiles, a commodity with relatively high freight rates, the range of increases for most shipments will be between \$5 and \$20. This represents, in most cases, less than 1 per cent of the delivered price to the consumer.

"The addition to costs will be largest for heavy users of coal, low-rated products of mines, and various construction materials which have a relatively low value in proportion to their weight. Utilities and industrial users of bituminous coal located at any distance from the mines will have to pay from 25 cents to 30 cents more for each ton. On the basis of current coal prices at the mine and current average

freight rates of approximately \$2.25, the net increase in transportation costs will amount to about 5 per cent of the total fuel bill. Steel producers, which are also heavy users of coal and coke, will in general, because of their proximity to mines, experience a somewhat lesser increase in fuel costs.

"The general percentage increases in costs which apply in the case of bituminous coal are roughly applicable in the case of road-building materials and other heavy construction material. Users of these products, however, may be able to offset in part the increased cost of raw materials through greater resort to trucking."

Representation of Employees

The Brotherhood of Railroad Trainmen has retained its right to represent yardmasters employed by the Staten Island Rapid Transit; the Switchmen's Union of North America has retained its right to represent yardmen, including foremen, helpers and switchtenders, employed by the Chicago Great Western; and the Brotherhood of Locomotive Engineers has retained its right to represent locomotive engineers employed by the Long Island, according to the results of recent elections which have been certified by the National Mediation Board.

The B. of R. T. defeated the challenging Railroad Yardmasters of America in the S. I. R. T. election, but lost in the C. G. W. referendum. In the L. I. election, the B. of L. E. defeated the Brotherhood of Locomotive Firemen & Enginemen.

I. C. C. Asks Detailed Reports on Freight-Car Ownership

Railroads have been called upon by the Interstate Commerce Commission to furnish by March 11 detailed reports on freight-car supply and ownership. The call came in a February 10 notice issued by I. C. C. Secretary W. P. Bartel in connection with the commission's No. 29699 investigation of railroad practices with respect to freight-car service, which is scheduled for hearing on March 18.

Another February 10 notice called the attention of shippers to that part of the order of investigation which raised the question whether cars are being "unfairly or inequitably distributed." Suggesting that this matter would be "particularly within the knowledge of shippers," this notice went on to say that the commission desires shippers "to introduce any material evidence in their possession pertinent to the issue quoted, in addition to offering any evidence which they deem to be relevant to the other issues outlined."

A third notice announced that the commission's Division 3 would sit along with Examiner Claude A. Rice at the hearings. Members of Division 3 are: Commissioners Carroll Miller; J. Monroe Johnson, who is also director of the Office of Defense Transportation; and Richard F. Mitchell, the new member of the commission.

The notice calling for reports from the railroads cited that part of the order of investigation which makes adequacy of car supply one phase of the inquiry. Nine types of cars are listed as being involved: Plain

box, ventilated box, automobile box, refrigerator, stock, ordinary gondola, flat, hopper, and covered hopper. The reports must be submitted to the commission's Bureau of Transport Economics and Statistics. They must contain "complete and adequate information" on:

Number of each class of cars owned or leased by each road and the age distribution by five-year periods of each class (all cars over 30 years old in one group) on January 1, 1941, and January 1, 1947; numbers of each class installed and retired by each respondent for each of the calendar years 1941 through 1946; numbers of each class held by each respondent for heavy and for light repairs on January 1, 1947; number serviceable of each class owned or leased by each respondent and number of each class on order January 1, 1947; and the percentage on each respondent's line of each class (including system and foreign cars) to the total of each class owned or leased on the first day of each month from June through December in each of the years 1941 through 1946.

The notice also calls for three traffic reports, the first to show the number of carloads (revenue and non-revenue separately) originated on each respondent's lines for each of four 13-week periods in 1946, classified according to the commodity groups of the Car Service Division, Association of American Railroads. The number of carloads originated and terminated during the week ended March 1, 1947, is to be shown, in turn, by the other two traffic reports. These are to be classified not only by commodity groups, but also "according to the number of cars of each of the classes of equipment which were used for transporting each such group of commodities."

Western Carriers Would Cancel Furlough Fares March 1

Railroads and bus lines operating generally west of the Mississippi river have filed tariffs with the Interstate Commerce Commission in which they propose to cancel, effective March 1, the 1 1/4-cents-per-mile round trip fares which have been available throughout the war period to service men and women traveling in uniform at their own expense. The eastern carriers canceled their furlough rates on January 30, as reported in *Railway Age*, January 18, page 203.

January Employment

Railroad employment decreased 1.43 per cent—from 1,353,389 to 1,334,095—during the one-month period from mid-December, 1946, to mid-January, 1947, and the mid-January total was 4.26 per cent under that of January, 1946, according to the preliminary summary prepared by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. The index number, based on the 1935-39 average, was 135.9 for January, as compared with 134.7 for the previous month and 142.0 for January, 1946.

January employment was above that of the corresponding 1946 month in only one group—transportation, other than train, engine and yard—in which the increase was 0.03 per cent. The decreases ranged from

0.26 per cent in the executives, officials and staff assistants group to 12.29 per cent in the maintenance of way and structures category.

As compared with the previous month, there were increases in employment in four groups, ranging from 0.16 per cent in transportation (yardmasters, switchtenders and hostlers) to 1.12 per cent in the maintenance of equipment and stores category. The decreases ranged from 0.26 per cent in professional, clerical and general to 6.43 per cent in maintenance of way and structures.

Car Service Order

The Interstate Commerce Commission has set back from February 10 until April 30 the expiration date of Service Order No. 661, which requires permits for certain food shipments moving from the Pacific Northwest through Atlantic and Gulf ports.

The Office of Defense Transportation has issued Amendment No. 5 to its minimum carloading order (General Order ODT-18A) to provide for exempting carload freight consisting of a complete order when such freight moves first by water on the high seas to a port in the United States and is transshipped therefrom by rail in a single car. The amendment became effective February 12.

Abandonments

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—This road has applied to the Interstate Commerce Commission for authority to abandon that portion of its line between DeKalb, Ill., and Aurora, approximately 25 miles, and to abandon operation over the Elgin, Joliet & Eastern between Aurora and Joliet, approximately 22 miles.

NEW YORK, NEW HAVEN & HARTFORD.—This road has applied to the Interstate Commerce Commission for authority to abandon those portions of its line extending from Southbury, Conn., to Hawleyville, approximately 9.1 miles, and from Hawleyville to Litchfield, approximately 32.5 miles.

TEXAS & PACIFIC.—Making a proposed report in the Finance Docket No. 15242 proceeding, Examiner J. S. Prichard has recommended that, subject to the usual employee-protection conditions, Division 4 of the Interstate Commerce Commission authorize this road to abandon that portion of its so-called Opelousas branch, extending approximately 20 miles from Church Point, La., to Crowley. The examiner noted that rail service will continue to be provided two of three affected communities by the Texas & New Orleans and the New Orleans, Texas & Mexico. To dispose of protestant contentions that public aid in the amount of about \$100,000 was extended in the construction of the branch through taxes levied by municipal authorities, and that continued operation would afford certain shippers the benefit of competitive rates, Mr. Prichard cited past commission rulings to the effect that neither of these matters is controlling in the determination of abandonments.

Equipment and Supplies

LOCOMOTIVES

The VIRGINIAN has ordered 4 6,800-hp. electric locomotives from the General Electric Company.

FREIGHT CARS

January Freight Car Orders Largest Since September

Orders by domestic railroads for 9,905 freight cars, including 1,501 ordered from railroad shops, were placed in January, compared with December orders for 3,046 cars, all placed with contract builders, according to S. M. Felton, president of the American Railway Car Institute. The number of cars ordered in January is the largest for any month since last September, when orders for 12,737 cars were placed.

Freight cars delivered for domestic use during January totaled 2,982, including 717 from railroad shops, compared with December deliveries of 3,174 cars, including 1,118 from railroad shops, Mr. Felton said. The total backlog of cars on order on February 1 was 75,578, compared with 40,670 a year ago, he added.

The ILLINOIS CENTRAL is inquiring for 1,000 50-ton hopper cars.

The NORFOLK & WESTERN has ordered 20 caboose cars from its own shops.

The NORFOLK & WESTERN is inquiring for 100 70-ton covered hopper cars.

The ST. LOUIS SOUTHWESTERN is inquiring for 25 to 50 70-ton covered hopper cars.

The SEABOARD AIR LINE is inquiring for 300 70-ton hopper cars.

The WABASH is inquiring for 500 50-ton box cars.

The DELRAY CONNECTING has ordered 100 70-ton hopper cars from the Greenville Steel Car Company.

The DENVER & RIO GRANDE WESTERN is inquiring for 300 to 500 50-ton drop-bottom gondola cars.

The GRAND TRUNK WESTERN has ordered 500 50-ton box cars from the Pullman-Standard Car Manufacturing Company.

The CHICAGO & EASTERN ILLINOIS has ordered 300 50-ton hopper cars from the Pullman-Standard Car Manufacturing Company.

The MINNEAPOLIS & ST. LOUIS has ordered 250 70-ton hopper cars from the Pullman-Standard Car Manufacturing Company.

The MISSOURI-ILLINOIS has ordered 100 70-ton ballast cars, 15 70-ton steel covered cement hoppers and 35 70-ton steel covered hoppers from the American Car and

Foundry Company. The inquiry for this equipment was reported in the *Railway Age* for September 9, 1946.

The MISSOURI PACIFIC has ordered 18 70-ton container cars from its own shops. The inquiry for this equipment was reported in the *Railway Age* for September 21, 1946.

The KANSAS CITY SOUTHERN has ordered 800 50-ton box cars from the Pullman-Standard Car Manufacturing Company. The inquiry for this equipment was reported in the *Railway Age* for December 7, 1946, page 978.

The SEABOARD AIR LINE has ordered 500 50-ton box cars and 175 70-ton phosphate cars from the Pullman-Standard Car Manufacturing Company. The inquiry for this equipment was reported in the *Railway Age* for February 1.

The WHEELING & LAKE ERIE has ordered 1,000 70-ton hopper cars from the Greenville Steel Car Company and 250 50-ton box cars from the American Car and Foundry Company at a cost of \$4,600,000. An inquiry for 1,000 hopper cars was reported in the *Railway Age* for January 25, page 250.

Supply Trade

Dale L. Bennett has been appointed mid-western zone manager of the Briggs Filtration Company to supervise the promotion of the company's industrial oil filters from headquarters in Chicago.

Aage B. Nilsen and the Consolidated Railway Equipment Company, New York, of which he is president, have been appointed export sales representatives by the Buckeye Steel Castings Company,



Aage B. Nilsen

for the sale of the latter's products in Mexico and Latin America. Mr. Nilsen will also act as a special representative for the company on domestic railroads.

Charles F. Pigott has been appointed sales representative of the Buckeye Steel Castings Company of Columbus, Ohio, with headquarters in the Railway Exchange

building, 80 E. Jackson blvd., Chicago. He was formerly manager of the railroad sales department of the United Gypsum Company.

H. B. Seemiller has been appointed traffic manager of the **Pressed Steel Car Company**, at McKees Rocks, Pa.

Charles G. Andrew, operating and engineering executive of the **Air Reduction Company**, was elected president of the **Compressed Gas Manufacturers' Association**.

R. J. Weir has been appointed traffic manager for the **Alan Wood Steel Company** and the **Rainey-Wood Coke Company**, Conshohocken, Pa., to succeed R. J. Stephens.

Raymond L. Collier, former executive secretary of the Steel Founders' Society of America, has been appointed executive vice-president of the **Gray Iron Founders' Society**, with offices in the Public Square building, Cleveland, Ohio,



Raymond L. Collier

effective March 1. Mr. Collier formerly served as assistant to the managing director of the **Lighting Equipment Manufacturers Association** and subsequently joined the **Steel Founders' Society of America**, with which organization he was associated for more than 18 years.

Vance C. Woodcox has been elected president of the **Enoz Chemical Company**, with headquarters at Chicago.

Bennett S. Chapple Jr., assistant to the sales vice-president of U. S. Steel of Delaware, has been appointed assistant sales vice-president, with headquarters at Pittsburgh, Pa.

Kenneth J. Tobin has been appointed a representative of the **Evans Products Company**, with headquarters at Chicago, to promote sales of the railroad loading equipment manufactured by that company's Loading division.

E. M. Van Winkle, eastern sales manager of **American Steel Foundries**, has been elected vice-president, with headquarters as before in New York. Mr. Van Winkle was graduated from **Purdue University** in 1921, following which he joined **American Steel Foundries** as a special ap-

prentice. After serving in various capacities he was appointed sales agent at New York in 1939, and the following year became assistant vice-president. During World War II he was assigned special duties at Washington, D. C., and later was



E. M. Van Winkle

transferred to the company's general office at Chicago as chairman of the priorities committee, returning to New York in 1944 as eastern sales manager in charge of the New York and Philadelphia, Pa., offices.

Roland E. Nelson has been appointed manager of the Chicago office of the **H. K. Porter Company**, to succeed **George L. Green**. Mr. Nelson was formerly sales engineer for the firm, serving the St. Louis, Mo., territory.

Carl H. Beck, former general sales manager of the **Westinghouse Air Brake Company**, has been elected vice-president. In his new capacity he will assist in research and the development and exploitation of new equipment.

Mr. Beck was graduated from **State College, Pa.**, in 1905. He joined **Westinghouse Air Brake** in June of that year as a special apprentice serving in a number of shop and field assignments until 1907, when he was made steam road in-



Carl H. Beck

spector at the Company's St. Louis, Mo., office. In 1909 he was named representative of the former **Westinghouse Traction Brake Company** at St. Louis and in 1919,

special representative of the former **Safety Car Devices Company**, at Wilmerding, Pa. He was appointed assistant eastern manager of **Westinghouse Air Brake** at New York in 1920 and eastern manager in 1932, a position he held until January 1, 1938, when he was appointed general sales manager, with headquarters at Wilmerding.

Joseph T. Ryerson & Son, Inc., have announced the appointment of **Charles S. Hegel** as manager of the **Stainless Steel** division, and **John W. Queen** as manager of the **Alloy Steel** division, both with headquarters in Chicago. Mr. Hegel joined the company in 1928, spending three years at the Chicago plant followed by four



John W. Queen

years at the Milwaukee, Wis., plant, where he was in charge of the **Special Steels** department. He returned to Chicago in 1945 as manager of the **Special Steels** department at that plant. Mr. Queen joined the **Ryerson** sales staff in 1933 at New York. He was appointed manager of the



Charles S. Hegel

Alloy Steel department at New York the following year.

The retirement of **G. Van Dyke**, manager of the **Special Steels** division, also was announced. Mr. Van Dyke was associated with the **Ryerson** organization for 30 years.

H. F. Jorgensen has joined the **John N. Thorp Company**, 50 Church street,

New York, distributors of construction equipment machinery and railroad supplies, representing the Mall Tool Company, the Marvel Equipment Company, the Jaeger Machine Company, the Rust-Oleum Corporation and the Woolery Machine Company.

W. B. Bowie, manager of the Pittsburgh, Pa., branch since 1938, has been appointed manager of railway and engineering sales for the **Electric Storage Battery Company**, at Philadelphia, Pa. **Kenneth W. Green**, assistant purchasing agent since August, 1946, has been appointed purchasing agent, to succeed the late **William B. Gold**. (A photo and short sketch of Mr. Green's career appeared in the *Railway Age* for August 10, 1946, page 247.) **C. J. Moore**, assistant manager of the Pittsburgh branch, has been promoted to manager to succeed Mr. Bowie.

J. F. Pryor of Houston, Tex., has been elected president of the **Magnolia Airco Gas Products Company**, to succeed **W. A. Sherman**, who will continue as a director of the firm. **R. A. Merritt**, former general manager of sales at Houston and **J. D. Schwartz**, former branch manager at El Paso, Tex., have been appointed vice-presidents. **R. F. Crow**, former executive vice-president, will continue as a director.

Kennametal Inc., Latrobe, Pa., has announced the addition of the following to its staff of application engineers: **A. V. Andrews** and **John L. Sullivan**, with headquarters at Pittsburgh, Pa.; **Gerald Bogner** at Cleveland, Ohio; **Charles R. Demmitt, Jr.**, at Chicago; **Robert Karakoosh** at Springfield, Mass., and **Walter C. Lavers** and **Joseph F. Liebscher** at the Los Angeles, Calif., office. The appointments of **Leo J. Perrette**, formerly on the staff of application engineers, as a representative in the Cincinnati, Ohio, district, with headquarters at 2162 Gilbert avenue, and **Harry W. Bearfoot**, formerly of the Philadelphia, Pa., office, as representative at the Pittsburgh office, also were announced.

John S. King, whose appointment as manager of the Chicago branch of **Fairbanks, Morse & Co.**, was reported in the *Railway Age* of January 18, began his career with the company as a student in its Beloit (Wis.) plant, where he assembled and tested pumping equipment and Diesel engines. In 1921 he was transferred to the Indianapolis (Ind.) works of the company, where he was engaged in the building of electric motors and generators. A year later Mr. King joined the sales force of the firm's Chicago branch, working as territorial representative on pumping equipment. He was appointed manager of that branch's pump department in 1930, and in 1937 he was advanced to manager of the firm's plant at New Orleans, La. In 1945 Mr. King was appointed to the executive staff at Chicago, where he was successively manager of the Pump division and assistant manager of the Railroad division. He held the latter position at the time of his recent appointment.

Financial

ALABAMA GREAT SOUTHERN.—Equipment Trust Certificates.—Division 4 of the Interstate Commerce Commission has authorized this road to assume liability for \$1,520,000 of Series J equipment trust certificates sold to Halsey, Stuart & Co. and others (see *Railway Age* of February 1), the proceeds of which will be applied toward the purchase price of \$1,907,000 for equipment which the applicant will acquire, as outlined in *Railway Age*, January 11, page 164.

CANADIAN PACIFIC.—New Director.—**F. Philippe Brais**, senior partner in the Montreal law firm of Brais, Campbell & De Grandpre, has been elected a director of this road to succeed the late Aime Geoffrin.

CHESAPEAKE & OHIO.—Equipment Trust Certificates.—Division 4 of the Interstate Commerce Commission has authorized this road to assume liability for \$2,300,000 of 1½ per cent equipment trust certificates, the proceeds of which will be applied toward the purchase of equipment estimated to cost \$2,950,220, as outlined in *Railway Age* of January 18, page 211. The certificates will mature in 10 equal annual installments of \$230,000, starting February 15, 1948. The report also approves a selling price of 99.129, the bid of Halsey, Stuart & Co., on which basis the average annual cost will be approximately 1.67 per cent.

CHESAPEAKE & OHIO.—Increases New York Central Holdings.—This road has arranged to obtain voting trust certificates for 250,400 shares of the capital stock of the New York Central on a tender from the Alleghany Corporation at a cost understood to be \$4,676,187. A total of 159 tenders covering 277,011 New York Central shares was received by the C. & O., which accepted only that made by Alleghany. Prices for the other 26,611 shares tendered ranged from \$21 a share to \$100. The C. & O. previously had purchased in the open market 65,000 New York Central capital shares at prices from \$18.67 a share to \$19 and its holdings of that stock now amount to 315,000 shares. The exercise of voting power of the holdings is invested in the Chase National Bank under order of the Interstate Commerce Commission, which in June, 1945, ruled that Alleghany and the C. & O. must deposit with the bank, as voting trustee, any voting stock they may acquire of carrier corporations not then affiliated with the C. & O. system.

CHICAGO, ROCK ISLAND & PACIFIC.—Equipment Trust Certificates.—This road has applied to the Interstate Commerce Commission for authority to assume liability for \$5,850,000 of Series V equipment trust certificates, the proceeds of which will be applied toward the purchase of 2 double-unit Diesel-electric road passenger locomotives, at an estimated unit cost of \$388,543, from the Electro-Motive Division of the General Motors Corporation; 100 steel automobile freight cars, each equipped with Evans loading devices, at an estimated unit cost of \$5,639, and 150

steel automobile freight cars, at an estimated unit cost of \$4,543, from the American Car and Foundry Company; and the following passenger-train equipment, for which estimated unit prices are listed, from the Pullman-Standard Car Manufacturing Company:

16 day coaches, \$86,810; 8 night coaches, \$88,867; 3 night coaches, \$92,167; 1 dining car, \$126,356; 3 dining cars, \$118,956; 2 coffee-shop cars, \$130,280; 1 coffee-shop car, \$143,900; 1 dining-observation car, \$144,125; 2 lounge-observation cars, \$108,000; 1 coach-observation car, \$122,280; 1 parlor car, \$109,950; 2 sleeping-observation cars, \$130,970; 1 sleeping-observation car, \$146,160; 5 sleeping cars, \$116,650; 1 sleeping car (22 roomettes), \$124,200; 1 sleeping car, \$120,073; 2 sleeping cars (12 double bedrooms), \$104,500; 3 baggage-mail cars, \$60,217; 1 baggage-dormitory car, \$100,120; 2 baggage cars, \$59,055.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—Equipment Trust Certificates.—Division 4 of the Interstate Commerce Commission has authorized this road to assume liability for \$1,700,000 of Series K equipment trust certificates sold to Halsey, Stuart & Co. and others (see *Railway Age* of February 1), the proceeds of which will be applied toward the purchase of equipment estimated to cost \$2,140,000, as outlined in *Railway Age*, January 11, page 164.

ERIE.—New Director.—**Charles F. H. Johnson**, president of the Botany Worsted Mills, Passaic, N. J., has been elected a director of this road to succeed **Charles T. Fisher, Jr.**, resigned.

ILLINOIS NORTHERN.—Promissory Note.—Division 4 of the Interstate Commerce Commission has authorized this road to issue two 4-year promissory notes in the total amount of \$165,000 to its parent corporation, the International Harvester Company. The notes, to bear interest at 3 per cent annually, will be in amounts of \$40,000 and \$125,000, the first evidencing an emergency advance to settle a personal injury suit and the second covering advances to pay overdue rental for a line leased from the Atchison, Topeka & Santa Fe and to supply additional working capital. Although the I. N. proposed that the notes bear interest at 4 per cent, the commission said that "in view of the applicant's financial condition and the fact that the notes will be issued to the parent company, we are of the opinion that the interest rate should not exceed 3 per cent per annum."

MISSOURI-KANSAS-TEXAS.—Promissory Note.—Division 4 of the Interstate Commerce Commission has authorized this road to (1) issue a \$5,000,000 promissory note to the Republic National Bank of Dallas, Tex., to evidence a loan of like amount; (2) to procure the authentication and delivery of \$10,000,000 of Series F prior-lien mortgage 4 per cent gold bonds and (3) to pledge and repledge from time to time all or any part of the Series F bonds as collateral security for the note.

The note, to be issued at par, will bear interest at the rate of 2¾ per cent yearly, the Republic National's bid which had been accepted subject to commission approval. It will be payable in 22 consecutive quarterly installments of \$175,000 each, starting December 31, 1947, with the remaining \$1,150,000 payable 3 months after the final installment. Proceeds will be applied to-

ward the purchase from time to time of the outstanding first mortgage 4 per cent bonds of the old Missouri, Kansas & Texas Railway and/or the prior-lien mortgage 5 per cent, 4½ per cent and 4 per cent bonds of the applicant as the latter may deem feasible.

NEW YORK CENTRAL.—Acquisition.—This road has applied to the Interstate Commerce Commission for authority to acquire and control, through ownership of capital stock, the Niagara Junction, which operates 23 miles of track in the Niagara Falls, N. Y., industrial area. The applicant proposes to purchase 10,000 shares of the Junction's capital stock from the Niagara Falls Power Company for \$1,000,000.

NEW YORK, CHICAGO & ST. LOUIS.—Equipment Trust Certificates.—This road has sold, subject to Interstate Commerce Commission approval, \$1,000,000 of serial equipment trust certificates of 1947 to Halsey, Stuart & Co. and associates on their bid of 99.059 for 1½ per cent obligations. The bid represented a net interest cost basis to the Nickel Plate of approximately 1.806 per cent. The certificates will be dated February 15, 1947, and will mature in ten equal annual installments, payable on February 15 of each year starting in 1948. (See the *Railway Age* for January 25, page 251.)

PENNSYLVANIA.—Equipment Trust Certificates.—Division 4 of the Interstate Commerce Commission has authorized this road to assume liability for \$14,970,000 of Series R equipment trust certificates, the proceeds of which will be applied toward the purchase of equipment estimated to cost \$18,712,500, as outlined in *Railway Age* of January 18, page 211. The certificates will mature in 15 equal annual installments of \$998,000, starting February 1, 1948. The report also approves a selling price of 99.209 for the certificates with a 1½ per cent interest rate, the bid of Halsey, Stuart & Co., on which basis the average annual cost will be approximately 1.99 per cent.

UNION PACIFIC.—Acquisition.—Division 4 of the Interstate Commerce Commission has authorized the Oregon Short Line and its lessee, the Union Pacific, to purchase from the Central Pacific and its lessee, the Southern Pacific, a 1.8-mile line between Corinne, Utah, and Corinne Junction, which forms an integral part of the U. P.'s Ogden-Malad branch. The segment, for which the applicants will pay \$20,000, plus taxes and assessments, was abandoned by the S. P. in 1942; but the U. P. has continued to operate over it under temporary lease arrangements. The purchase was authorized subject to the usual employee-protection conditions.

VALLEY.—Control.—Division 4 of the Interstate Commerce Commission has authorized the Susquehanna Chemical Corporation, Bradford, Pa., to acquire, through ownership of capital stock, control of this road, which owns approximately 1 mile of track at Westline, Pa., and operates the Pennsylvania's so-called Kinuza branch between Westline and Kinuza, approximately

15 miles. The applicant will pay \$10,000 for the 144 shares of issued and outstanding stock, par value \$100 each, of the Valley. The commission approved the transaction subject to the usual employee-protection conditions. The principal reason for the acquisition of the Valley is the fact that is primarily a plant facility of Westline properties owned by the applicant which also controls the Clarion River.

Average Prices Stocks and Bonds

	Feb. 11	Last week	Last year
Average prices of 20 representative railway stocks...	52.86	52.06	66.86
Average prices of 20 representative railway bonds...	93.35	92.75	102.85

Dividends Declared

Cleveland & Pittsburgh.—7% guaranteed, 87½c, quarterly; 4% special guaranteed, 50c, quarterly, both payable March 1 to holders of record February 10.

Green Bay & Western.—\$5.00, annual; Debenture A, \$50.00, both payable February 20 to holders of record February 10.

Construction

NORFOLK & WESTERN.—This road has undertaken an extensive improvement and modernization project on one of the busiest districts of its main line in the mountains of West Virginia at an approximate cost of \$12,000,000. The work, expected to get underway in mid-summer of this year, includes relocating and building 5.27 miles of new line between Lick Branch and Cooper, 11 miles west of Bluefield, W. Va.; construction of a new double-track 6,900-ft. tunnel and elimination of Elkhorn tunnel; erection of two new steel bridges and rebuilding of a third. N. & W. engineers estimate it will take three years to complete the job. Designed to reduce heavy grades



Added Protection for Trains

Trainman operates a portable Mars oscillating light attached to the rear of an Atlantic Coast Line train; this road has equipped all its passenger trains with this rear-end protection.

and sharp curves, the improvements will increase operating efficiency, improve safety and enable the railroad to handle considerably more traffic, it was explained.

The new line, fully equipped with automatic signals and centrally controlled switches providing for train operation in both directions on both tracks, will be located below the present line, diverging from it at Lick Branch and Cooper. The level of the new tunnel will be approximately 100 ft. below the old tunnel. The project will eliminate three high viaducts.

Eastbound, the new line will have a maximum compensated grade of 1.4 per cent, compared with 2 per cent on the existing line. Westbound, the grade, now 1.2 per cent, will be practically eliminated except for a short stretch between Cooper tunnel and Bluestone. Curvature will be reduced from a maximum of 12 degrees to a maximum of six degrees. The new tunnel will be more than twice as long as the Elkhorn bore and, in order to provide maximum clearance and satisfactory ventilation, will have an inside area more than three and one-half times as large. It will have a grade of only one per cent against eastbound traffic as compared with the 1.4 per cent grade in the old tunnel.

Railway Officers

EXECUTIVE

G. A. Ryser, whose promotion to assistant to vice-president—traffic of the Texas & Pacific, at Dallas, Texas, was reported in the *Railway Age* of February



G. A. Ryser

8, was born on November 16, 1898, at St. Louis, Mo. He entered railway service there in 1914 with the Missouri-Kansas-Texas, serving in various positions in the general freight office until 1920. Early in that year he joined the Kansas, Oklahoma & Gulf as chief clerk, traffic department, returning to the Katy in June, 1920, as chief clerk to assistant general freight agent at Kansas City, Mo. He was appointed commerce clerk at St. Louis in 1922, and in 1925 he became associated

with the T. & P. in that position at Dallas. In 1928 he was appointed assistant general freight agent there, in which capacity he served until his new promotion.

J. C. M. Dodds, assistant to vice-president in charge of operations of the Union Pacific, with headquarters at Omaha, Neb., will retire on February 28, after nearly 40 years of service with the road. He entered railway service at Portland, Ore., in 1907, as an accounting office clerk for the Oregon Railroad & Navigation Company (part of the U. P. system), and the following year was transferred to Spokane, Wash. Returning to Portland in December, 1908, Mr. Dodds held various positions, including that of fuel clerk, auditor of disbursements and chief clerk. In 1932 he went to Omaha as assistant statistician in the office of the executive vice-president, which position he held until 1937, when he was advanced to statistician. He was promoted in 1945 to his present position of assistant to vice-president—operations.

Ralph C. Trovillion, whose promotion to assistant vice-president—traffic of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo., and Dallas, Tex., was reported in the *Railway Age* of February 8, was born on August 26, 1887, at Gol-



Ralph C. Trovillion

conda, Ill. He entered railway service in 1905 with the Chicago & Alton (now Alton), serving until 1906 as stenographer and rate clerk at St. Louis. He joined the Katy in 1909, and subsequently advanced successively through positions of stenographer, rate clerk, clerk to assistant general freight agent and chief clerk to general freight agent. Following military service as a second lieutenant during World War I, Mr. Trovillion returned to the Katy as chief clerk. He advanced to assistant general freight agent in 1920, and to general freight agent in 1924. In 1931 he became freight traffic manager, holding that position until 1945, when he was promoted to general traffic manager. He was serving in the latter capacity at the time of his new appointment.

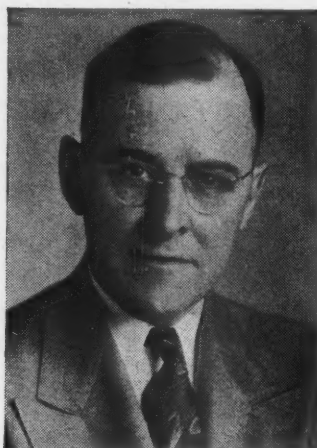
FINANCIAL, LEGAL AND ACCOUNTING

W. S. Allison, assistant chief claim agent of the Southern at Washington,

D. C., has been appointed general claim agent, with the same headquarters. **W. R. King**, assistant to chief claim agent, has been appointed general claim agent, with headquarters as before at Washington.

OPERATING

Horace B. Stetson, whose appointment as superintendent of the Monongahela division of the Pennsylvania at Pittsburgh, Pa., was reported in the *Railway Age* of February 1, was born on March 9, 1895,



Horace B. Stetson

at Bristol, Pa. He entered railroad service as a clerk on the New York division of the Pennsylvania on October 12, 1915, being furloughed for military duty from June 1, 1917, to July 21, 1919, when he returned to the Pennsylvania as assistant yardmaster on the New York division. Mr. Stetson was promoted to passenger yardmaster on April 1, 1925, and advanced to assistant passenger trainmaster on that division on February 1, 1928. He served as passenger trainmaster on the Middle division from September 1, 1936, to February, 1941, with the exception of eight and one-half months from November 1, 1937, to July 16, 1938, when he had charge of passenger train service on the Baltimore division. Mr. Stetson was appointed superintendent of the Williamsport division in February, 1941, and in January, 1942, he became superintendent of passenger transportation of the Eastern region at Philadelphia, which position he held until his recent appointment as superintendent of the Monongahela division at Pittsburgh.

Herbert S. Thompson, yardmaster of the Southern at Columbia, S. C., has been promoted to safety supervisor at Charlotte, N. C.

R. M. Markland has been appointed assistant to general manager of the Chesapeake & Ohio, with headquarters at Richmond, Va., succeeding **W. K. Morton**, who has been assigned to other duties.

Earle Lind, whose retirement as superintendent of the Chicago Terminal division of the Wabash, with headquarters at Chicago, Ill., was reported in the *Railway Age* of February 8, was born on August 18, 1877, at Defiance, Ohio. He began his railroad career with the Wabash in 1894 at Jewell, Ohio, holding various positions as

agent-telegrapher on the road's Peru division until 1905. From the latter year until 1918 he served successively as traveling freight agent at Kansas City, Mo., commercial agent at Hannibal, Mo., and division freight and passenger agent at Moberly, Mo. He was appointed trainmaster at Stanberry, Mo., in 1918, and later was advanced to superintendent at Kansas City. Mr. Lind had held the position of superintendent at Chicago since April 15, 1932.

Charles C. Robinson has been appointed assistant superintendent of car service of the Chicago, Indianapolis & Louisville, with headquarters at LaFayette, Ind. He was formerly associate editor of *Railway Age*, with headquarters at Chicago.

Charles H. Keller, whose promotion to superintendent of the Chicago terminal division of the Wabash, with headquarters at Chicago, was reported in the *Railway Age* of February 8, was born on September 29, 1901, at Decatur, Ill., and attended Indiana University. He entered railway service in 1920 with the New York Central, serving successively with that road at Ft. Wayne, Ind., as clerk, switchman and yardmaster. He joined the Wabash in 1924 as a clerk at Ft. Wayne, advancing to yardmaster in 1928 and to general yardmaster the following year. He was promoted to assistant trainmaster at Montpelier, Ohio, in 1936, and to trainmaster there in 1937. In 1940 Mr. Keller became trainmaster at Peru, Ind., and in 1942 was transferred to Decatur, Ill. He was serving as trainmaster at the latter point at the time of his new appointment.

Manuel R. Palacios, whose appointment as general manager of the National of Mexico, with headquarters at Mexico, D. F., Mex., was reported in the *Railway Age* of December 14, 1946, was born on November 1, 1906, at Oaxaca de Juarez, Oax., and received his higher education in law at the National University of Mexico City. He entered railway service in 1943 as a member of the Managing committee of the National, which position he still retains. Mr. Palacios began his career in 1932 as a teacher of sociology at the National University, and since that date has held various positions with the university and with the Mexican government. He has served as chief of the juridical department of the department of interior, and from 1941 to 1943 he was president of the federal board of conciliation and arbitration. On September 1, 1946, he was elected to Congress as senator for the state of Oaxaca. Mr. Palacios' recent appointment was effective on December 1, 1946.

TRAFFIC

L. N. DeWeese has been appointed industrial commissioner of the Pere Marquette, with headquarters at Detroit, Mich.

Charles H. Pistor, whose promotion to general freight agent of the Texas & Pacific, with headquarters at Dallas, Tex., was reported in the *Railway Age* of February 8, was born on August 23, 1901, at St. Louis, Mo., and received his higher

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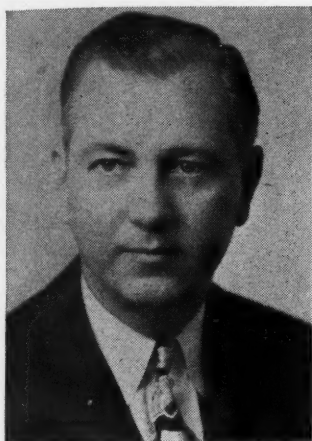
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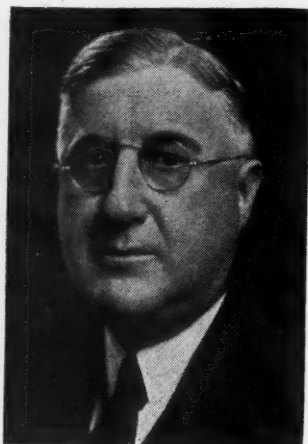
education in law at the Benton College of Law and Washington University, both at St. Louis. He entered railway service there in 1917 as stenographer and secretary to general freight agent of the Mobile & Ohio (now Gulf, Mobile & Ohio), and



Charles H. Pistor

subsequently became rate clerk with the road. From 1924 to 1928 Mr. Pistor was associated with the Missouri-Kansas-Texas successively as rate clerk, division clerk, chief rate clerk, chief clerk to assistant general freight agent and commerce clerk handling cases of the Interstate Commerce Commission. In 1928 he joined the T. & P., and subsequently held several clerical positions prior to his appointment in 1935 as assistant general freight agent at Dallas, in which capacity he was serving at the time of his recent promotion.

Clyde P. Bowsher, whose promotion to freight traffic manager of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of February 8, was born on November 16, 1879, at Millersburg, Ohio. He began his railroad career in 1899 as a stenographer in the passenger department of the Baltimore & Ohio at Cincinnati, Ohio, and



Clyde P. Bowsher

in June of that year joined the Katy as stenographer-clerk there. He was later transferred to St. Louis, and subsequently advanced through positions as traveling freight agent at Cincinnati, commercial agent at Louisville, Ky., and division freight and passenger agent at Oklahoma

City, Okla. In 1920 he was appointed division freight agent at St. Louis, where he remained until 1929, when he became northern traffic representative at Chicago. From 1931 to 1932 he served as general freight agent at Kansas City, Mo., and from the latter year until 1937 he held a similar position at St. Louis. In 1938 he was promoted to assistant freight traffic manager there, in which capacity he was serving at the time of his new appointment.

F. A. Harmon and **F. H. Cummings**, assistant coal traffic managers of the Chesapeake & Ohio at Chicago and Cincinnati, Ohio, respectively, have been appointed coal traffic managers at those two points.

John R. Mills, whose retirement as freight traffic manager of the Kansas City Southern, at Kansas City, Mo., was reported in the *Railway Age* of February 8, was born on February 20, 1874, at Sherman, Tex. He entered railway service in 1887 as a clerk in the freight traffic department of the Kansas City, Fort Scott & Mem-



John R. Mills

phis (now part of the St. Louis-San Francisco), and from 1894 to 1901 he served as chief tariff clerk of the road. Mr. Mills joined the K. C. S. in 1901 as chief tariff clerk, and the following year was appointed chief clerk, traffic department. He was advanced to assistant general freight agent in 1908, which position he held until 1928, when he was promoted to assistant freight traffic manager. In 1937 he was appointed freight traffic manager, and in 1939 he became assistant to vice-president. Mr. Mills served in the latter capacity until 1944, when he was again appointed freight traffic manager, the position he held at the time of his retirement.

Lloyd W. Baker, whose promotion to freight traffic manager in charge of sales and service for the entire Baltimore & Ohio system at Baltimore, Md., was reported in the *Railway Age* of February 8, was born at Mt. Airy, Md., on October 17, 1905. Mr. Baker received his LL.B. degree in 1935 from the University of Baltimore (night classes) and was admitted to practice law in Maryland in 1936. He has been with the Baltimore & Ohio since August, 1923, when he entered the freight traffic offices at Baltimore. Mr. Baker was en-

gaged in various positions until January 1, 1937, when he was promoted to industrial agent at Cincinnati, Ohio. Advancing to division freight agent at Indianapolis, Ind., in May, 1939, he was transferred to Dayton, Ohio, in January, 1941. He was



Lloyd W. Baker

appointed assistant general freight agent at Cincinnati in September, 1943, and in September, 1945, he was promoted to general freight agent at Baltimore, the position he held until his recent promotion to freight traffic manager in charge of sales and service.

Francisco C. Lona, assistant passenger traffic manager of the National of Mexico, has been promoted to passenger traffic manager, with headquarters as before at Mexico, D. F., Mex.

Ernest L. Billingsley, whose promotion to assistant freight traffic manager of the Texas & Pacific, with headquarters at Dallas, Tex., was reported in the *Railway Age* of February 8, was born on February 10, 1883, in Lee county, Tex., and received his higher education at the Dallas Business University, at Dallas. He entered railway service in 1902 in the accounting department of the T. & P., and from 1906 to 1915



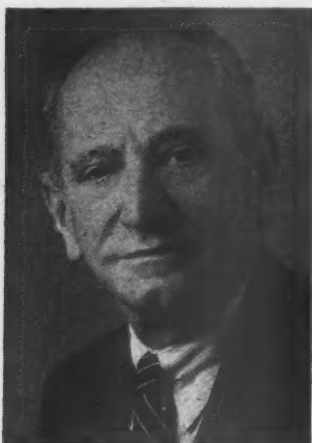
Ernest L. Billingsley

he served in the traffic department of that road. In the latter year he entered the employ of the Railroad Commission of Texas, at Austin, Tex., remaining in that position until 1920. Rejoining the T. & P. he became assistant general freight agent

at Dallas in 1921, and general freight agent there in 1945. Mr. Billingsley held the latter position at the time of his new appointment.

J. K. Morgan, assistant to freight traffic manager of the Seaboard Air Line, has been promoted to assistant freight traffic manager, with headquarters as before at Norfolk, Va., succeeding **J. P. Derham**, whose promotion to freight traffic manager at Norfolk was reported in the *Railway Age* of February 8. The position of assistant to freight traffic manager formerly held by Mr. Morgan has been abolished.

Henry W. Landman, whose promotion to general freight and passenger agent of the Missouri-Kansas-Texas, with headquarters at Fort Worth, Tex., was reported in the *Railway Age* of February 8, was born on January 17, 1881, at Whitney, Tex. He entered railway service in 1896 as a messenger in the Katy's telegraph office



Henry W. Landman

at Denison, Tex., subsequently advancing through positions as telegraph operator, rate clerk, soliciting freight agent, commercial agent and division freight agent. He was appointed assistant general freight and passenger agent at Fort Worth in 1933, which position he held at the time of his promotion on February 1.

The sales and service branches of the freight traffic department of the Chesapeake & Ohio and Pere Marquette have been separated, and as a result **Arthur S. Genet**, vice-president—traffic, has announced the following appointments of regional freight traffic managers in charge of sales with their respective headquarters: **W. L. Bailes**, formerly assistant freight traffic manager, with headquarters as before at Chicago; **A. M. Glassmeyer**, formerly assistant freight traffic manager—sales and service at Cincinnati, Ohio, to be located there; **B. N. Maier**, formerly assistant freight traffic manager in charge of solicitation, with headquarters as before at Detroit, Mich.; **D. L. O'Connor**, general freight agent at Huntington, W. Va., with new headquarters at Richmond, Va.; **Aubrey O'Herron**, with headquarters at New York, and **E. E. Sharps**, with headquarters at San Francisco, Cal. **E. F. Kessler**, assistant to freight traffic manager—sales and service at Cincinnati, has been promoted to assistant freight traffic

manager—sales at that point. **W. L. Granzen** has been appointed general eastern freight agent at New York. The following appointments of seven general agents were also announced: **M. R. Coleman**, Memphis, Tenn.; **C. A. Carlson**, Minneapolis, Minn.; **H. Vor Halvorsen**, Portland, Ore.; **E. J. Stenzel**, Dallas, Tex.; **Ed. W. Lambert**, New Orleans, La.; **B. W. Peterson**, Des Moines, Iowa; and **John Madden**, Montreal, Que. The latter five appointments are for newly opened offices.

ENGINEERING & SIGNALING

J. E. Nielsen, chief draftsman to the structural engineer of the Chicago, Burlington & Quincy, at Chicago, has been appointed assistant engineer of buildings, with the same headquarters.

A. J. Hegele, assistant engineer of the Wheeling & Lake Erie at Cleveland, Ohio, has been appointed acting special engineer, with the same headquarters, succeeding **T. J. Williams**, who has left the service of the company.

F. H. Masters, whose appointment as special engineer of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill., was reported in the *Railway Age* of February 8, was born in Clinton county, Ind., on June 30, 1879, and was graduated by Indiana University (A.B., 1902), and by Cornell University (C.E., 1904). He entered the service of the Elgin, Joliet & Eastern in August, 1906, as assistant engineer, maintenance and construction. From 1907 to 1918 he served as assistant engineer and division engineer maintenance and construction, at Gary, Ind. In April, 1918, he was appointed assistant chief engineer, with headquarters at Joliet, Ill., and in January, 1939, he was advanced to chief engineer, the position he held at the time of his recent appointment.

F. H. Simpson, the announcement of whose recent promotion to engineer maintenance of way, Lines West, of the New York Central, in charge of roadway and structures, with headquarters at Chicago, appeared in the *Railway Age* of February



F. H. Simpson

8, was born at Fulton, N. Y., on January 18, 1893, and graduated in civil engineering from Rensselaer Polytechnic Institute in 1915. He entered railway service in that year as a rodman on the New York

Central at Poughkeepsie, N. Y., and from November, 1917, to July, 1919, he served in France with the U. S. Army. In August, 1919, Mr. Simpson returned to the New York Central as assistant resident engineer, with headquarters at New York, and one year later he was transferred to the New York Terminal district. In April, 1937, he was advanced to assistant engineer, with the same headquarters, and two years later he was promoted to assistant district engineer at Detroit, Mich. In October, 1942, Mr. Simpson was transferred to Cleveland, Ohio, and on April 1, 1943, he was advanced to assistant chief engineer, with headquarters at Chicago, the position he held at the time of his recent promotion.

MECHANICAL

W. J. Holloway, road foreman of engines of the Canadian Pacific, at Kenora, Ont., has been appointed division master mechanic, with headquarters at Edmonton, Alta.

H. E. Lehnherr has been appointed assistant master mechanic of the Kansas City terminal division of the Missouri Pacific, with headquarters at Kansas City, Mo., succeeding **A. Walker**, who has been assigned to other duties.

SPECIAL

W. A. Morrison, chief surgeon of the Atchison, Topeka & Santa Fe at Los Angeles, Cal., has been promoted to medical director of the system there, a newly created position.

Kenneth M. Robertson has been appointed manager of the employee's suggestion system of the Chesapeake & Ohio, with headquarters at Richmond, Va., a newly-created position.

Dr. K. E. Dowd, chief medical officer of the Canadian National and Trans-Canada Air Lines, with headquarters at Montreal, Que., has been elected chairman of the Medical and Surgical section of the Association of American Railroads.

OBITUARY

Samuel L. McClanahan, whose retirement as division engineer of the Chicago, Rock Island & Pacific, with headquarters at El Reno, Okla., was reported in the *Railway Age* of December 28, 1946, died on February 3 at Versailles, Mo.

Elwood McAfee Paradis, chief chemist of the West Albany laboratory of the New York Central system, died on January 31, at Albany General hospital, Albany, N. Y., in his 58th year. Mr. Paradis was born at Stockton, Md., on April 19, 1889, and was graduated by Maryland State College in June, 1908, with a B.S. degree in chemistry. He was employed by the Pennsylvania from 1908 to 1913 as chemist and went with the New York Central system on August 1, 1913, as first assistant chemist at the Collinwood laboratory. He was promoted to foreman of the chemical laboratory at Collinwood on June 1, 1916, and to chief chemist at the West Albany laboratory on October 1, 1917, the position he held until his death.

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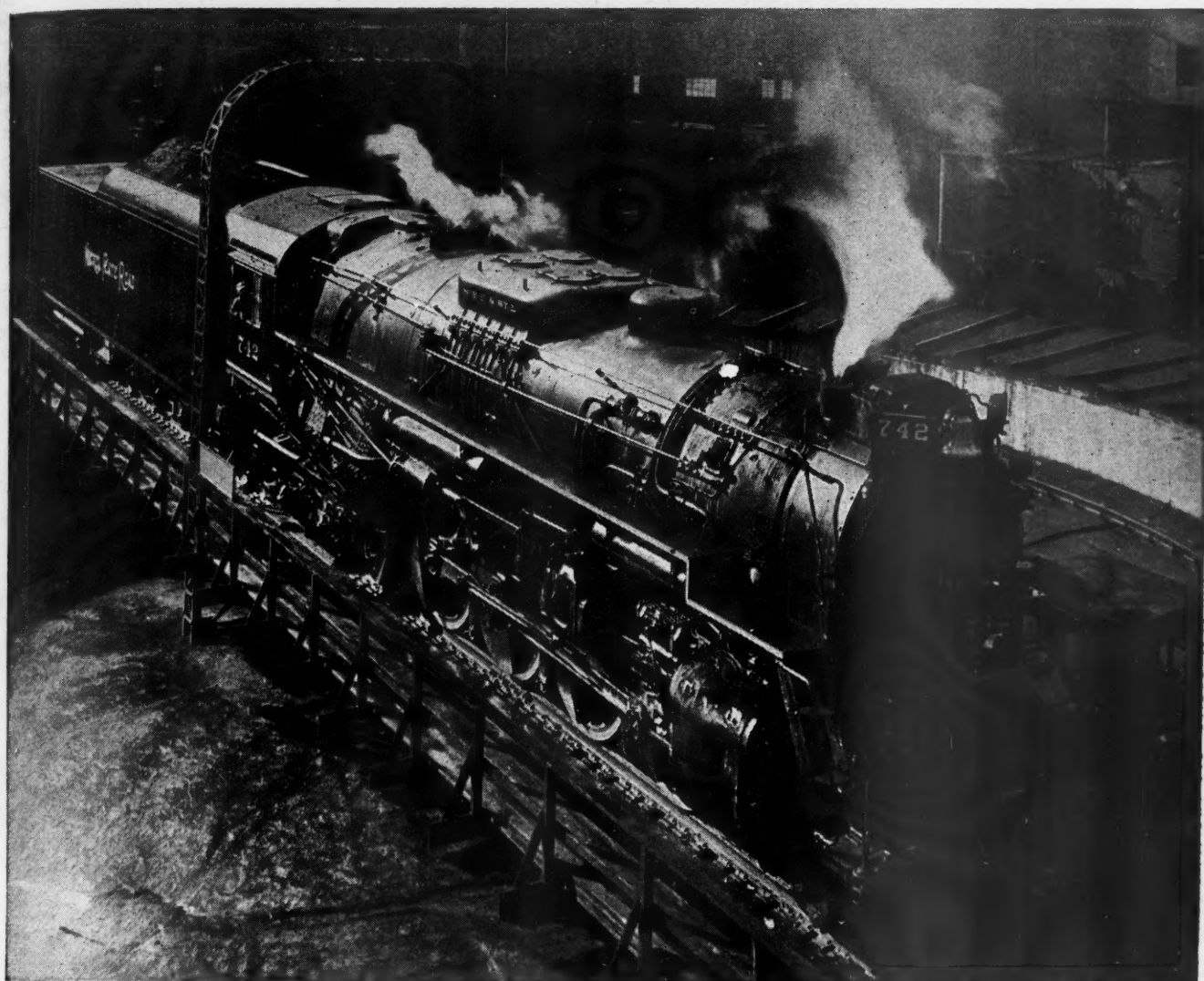
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HEAVY PAYLOADS

...at passenger speeds

The Nickel Plate's fleet of fifty-five Lima-built 2-8-4s enables them to maintain the necessarily fast schedules required by today's freight demands. During the past five years, this railroad has been building up its motive power to enable it to handle maximum payloads at a maximum of efficiency and economy.

Freight train schedules are rapidly approaching the speeds of passenger schedules. Keep abreast of the times with power that is capable of meeting today's ever increasing demands.

LIMA LOCOMOTIVE WORKS



INCORPORATED, LIMA, OHIO

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1946

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Total	Net from railway operation	Net railway operating income		
		Freight	Passenger	Total (inc. misc.)	Maintenance of Way and structures	Equipment	Traffic				Trans- portation	Railway tax accruals	1946	1945
Albion, Canton & Youngstown	Dec. 171	\$353,036	\$23	\$378,960	\$66,796	\$34,871	\$25,812	\$119,169	\$264,231	\$114,729	\$44,761	\$54,260	\$41,749
Albion	Dec. 171	3,990,182	1,366	4,215,287	762,726	422,802	282,092	1,460,455	3,242,225	981,062	347,168	413,813	443,054
Alton	Dec. 959	1,512,096	550,275	2,407,079	457,861	4,927,957	89,692	1,050,236	2,182,268	2,346,247	*2,350,610	2,350,610	959,117
	12 mos.	17,796,047	7,281,273	28,814,591	6,279,588	4,967,319	965,820	12,331,352	26,573,813	2,240,778	*4,399,564	585,556	2,563,814
Atchison, Topeka & Santa Fe System	Dec. 13,084	28,772,819	4,692,469	37,031,997	4,995,773	6,704,250	867,483	13,596,435	27,809,284	9,222,713	5,250,048	4,269,452	2,184,475
Atlanta & West Point	Dec. 13,083	301,191,668	75,215,923	411,604,239	61,783,374	79,836,374	8,960,723	149,044,847	313,955,736	97,676,503	52,699,892	45,544,082	37,084,177
	12 mos.	186,199	75,215,923	411,604,239	61,783,374	79,836,374	8,960,723	149,044,847	313,955,736	97,676,503	52,699,892	45,544,082	37,084,177
	12 mos.	2,552,415	978,736	3,952,602	537,347	722,642	147,553	2,060,836	3,717,830	234,772	*106,969	82,950	323,707
Western of Alabama	Dec. 133	123,844	62,259	205,770	71,018	76,282	12,377	139,822	319,265	113,495	*85,342	21,472	48,235
Atlantic Coast Line	Dec. 133	2,404,120	981,528	3,716,225	626,869	818,766	142,727	1,091,452	3,080,103	227,332	*24,610	1,606,096	382,321
	12 mos.	8,162,440	2,440,737	11,807,537	2,017,669	1,810,660	269,630	4,435,435	3,580,220	2,271,330	4,400,000	5,494,999	5,494,999
	12 mos.	86,972,192	28,534,190	126,105,162	29,622,616	21,623,616	3,024,354	55,759,115	113,728,023	12,377,139	4,400,000	5,494,999	5,494,999
Charleston & Western Carolina	Dec. 343	318,747	116,187	374,776	827,036	67,762	12,420	143,368	274,266	65,779	*30,000	93,579	256,259
Baltimore & Ohio	Dec. 6,192	21,312,189	2,526,876	25,265,017	3,157,355	6,160,457	698,917	11,923,952	23,188,412	2,076,605	*18,283,230	20,032,279	2,800,559
	12 mos.	251,692,489	36,037,308	304,647,588	44,465,263	73,419,319	7,530,850	135,203,878	275,420,424	29,227,164	*425,531	25,053,543	37,043,094
Staten Island Rapid Transit	Dec. 29	188,897	105,121	305,759	89,664	51,300	1,610	159,032	328,335	22,576	*92,479	43,915	390,421
Bangor & Aroostook	Dec. 29	3,326,479	1,387,931	3,565,346	624,644	463,850	18,234	1,867,789	3,261,027	304,319	311,833	257,156	315,001
	12 mos.	752,344	59,113	840,904	191,333	236,749	7,586	346,596	833,766	7,138	*418,360	440,942	68,588
	12 mos.	9,165,190	689,810	10,169,410	2,547,539	2,861,068	88,592	3,432,177	9,009,440	1,159,970	309,935	968,442	1,232,913
Bessemer & Lake Erie	Dec. 214	694,735	1,717	714,850	114,991	457,549	16,898	339,761	983,443	268,593	*413,748	406,679	1,763,897
Boston & Maine	Dec. 214	15,567,278	21,147	15,770,418	1,678,036	5,007,598	187,849	4,237,606	11,676,313	4,094,105	2,307,947	4,683,886	1,803,270
	12 mos.	4,679,569	1,196,528	6,483,055	1,194,277	927,476	98,616	2,871,231	5,358,337	1,274,718	39,528	787,442	3,432,938
	12 mos.	53,766,934	16,754,983	77,167,150	12,990,322	12,697,208	1,151,797	33,986,623	64,126,323	13,040,827	5,087,151	4,496,975	3,560,677
Burlington-Rock Island	Dec. 228	209,260	64,807	296,566	39,477	35,891	4,191	114,781	211,604	84,962	7,633	35,693	53,889
Cambria & Indiana	Dec. 228	1,165,380	814,285	3,221,436	31,780	392,613	48,550	1,347,373	2,528,153	112,414	11,214	67,714	502,522
	12 mos.	95,919	.....	96,047	23,483	58,232	13,147	30,897	1,264,450	30,963	*23,072	50,824	50,824
	12 mos.	1,346,719	.....	1,347,526	167,732	587,156	8,429	35,125	1,093,378	254,148	573,993	662,213	591,059
Canadian Pacific Lines in Maine	Dec. 234	470,268	42,614	532,562	65,151	108,540	*16,969	229,789	397,351	135,211	32,031	33,633	72,182
Canadian Pacific Lines in Vermont	Dec. 234	3,892,598	711,167	4,940,005	1,092,791	801,850	80,296	2,028,445	4,134,740	814,789	277,894	247,210	1,117,481
	12 mos.	121,416	14,966	158,724	35,754	39,430	14,809	142,039	242,790	84,066	21,739	145,401	117,181
	12 mos.	1,253,934	234,510	1,725,325	490,666	382,759	55,018	1,479,555	2,476,875	751,550	145,435	1,374,830	1,247,216
Central of Georgia	Dec. 1,815	2,117,631	285,628	2,645,525	337,172	451,096	93,450	1,334,900	2,370,904	274,621	63,491	215,299	1,001,445
Central of New Jersey	Dec. 1,815	24,224,889	4,535,564	31,703,424	5,141,410	5,481,603	1,120,729	15,741,152	23,395,993	2,307,431	1,125,806	1,414,037	3,807,448
	12 mos.	2,000,421	439,694	2,705,833	388,000	565,904	48,185	1,683,732	2,832,452	1,266,619	2,490,348	2,129,616	3,917,022
	12 mos.	32,765,442	6,396,701	41,896,469	5,447,007	8,151,673	694,488	21,693,732	38,136,555	3,759,914	1,888,370	353,528	145,349
Central R. R. Co. of Pennsylvania	Dec. 213	1,355,433	19,966	1,399,954	61,884	280,940	20,499	477,974	876,218	523,736	51,169	653,614	2,960,322
Central Vermont	Dec. 93	6,475,423	97,392	6,663,711	607,326	1,351,155	97,845	2,232,334	4,458,898	2,204,813	238,453	3,082,962	2,669,371
	12 mos.	647,878	67,341	774,620	136,551	353,543	12,365	372,492	651,629	122,991	36,352	24,547	33,649
	12 mos.	6,578,374	1,034,341	8,275,998	1,345,168	1,368,607	132,626	4,275,174	7,532,202	743,796	523,333	427,059	49,378
Chesapeake & Ohio	Dec. 3,106	13,875,660	804,710	15,219,356	2,155,933	3,145,701	369,611	5,559,990	11,949,767	3,269,589	1,356,285	2,290,983	3,146,180
	12 mos.	172,210,503	13,681,438	193,407,929	26,579,327	35,945,438	3,760,114	65,971,896	139,896,101	53,511,828	25,606,438	32,832,962	22,025,257
Chicago & Eastern Illinois	Dec. 910	1,443,941	372,357	2,063,599	633,278	81,872	1,043,923	1,043,923	2,384,196	320,597	*1,674,608	1,252,634	96,283
	12 mos.	17,693,408	4,544,492	24,641,102	4,358,963	5,467,235	943,494	11,468,219	23,639,916	1,001,186	*254,608	197,214	2,463,121
Chicago & Illinois Midland	Dec. 131	477,997	979	522,506	41,327	150,968	23,311	158,563	403,121	119,385	*30,524	146,752	31,251
Chicago & North Western	Dec. 131	5,721,080	11,043	6,065,842	710,135	1,451,809	289,414	1,922,148	4,714,446	1,351,536	556,821	764,244	80,583
	12 mos.	8,906,511	2,301,438	12,815,436	1,504,933	2,371,904	212,842	6,165,444	10,855,544	2,503,404	1,404,024	1,503,280	553,280
	12 mos.	109,404,962	33,329,213	160,516,750	24,515,768	30,262,909	3,094,390	71,098,778	136,562,753	23,953,997	9,796,073	10,893,790	18,192,820
Chicago, Burlington & Quincy	Dec. 8,867	12,503,838	1,722,358	15,671,130	2,526,734	2,861,543	330,448	6,138,447	12,410,456	3,260,674	1,623,430	1,381,555	6,947,622
	12 mos.	148,897,285	27,896,559	195,925,665	31,412,419	27,660,947	4,048,957	68,613,877	139,250,672	56,673,993	25,693,903	26,991,078	34,347,789
Chicago Great Western	Dec. 1,500	2,118,987	72,549	2,414,977	350,469	73,972	1,215,509	1,215,509	1,860,483	554,494	*802,069	1,163,804	211,691
	12 mos.	22,614,987	1,891,157	27,105,784	4,220,909	4,064,410	870,634	12,961,668	23,095,675	4,012,109	*87,205	1,856,096	2,608,378
Chicago, Indianapolis & Louisville	Dec. 541	941,580	61,390	1,069,404	185,313	180,785	47,278	543,266	1,017,946	51,458	64,867	134,695	38,295
	12 mos.	10,227,100	596,962	11,457,996	1,839,896	2,215,736	485,892	5,048,817	10,264,258	1,193,738	762,870	594,943	1,716,939

* Credit

* Credit

Table continued on next left-hand page.

Railway Age—February 15, 1947

Do you know why

THE
FRANKLIN SYSTEM
OF
STEAM DISTRIBUTION

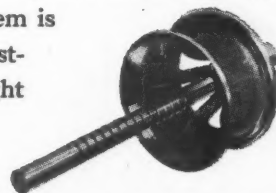
does a fundamentally better job?

The Franklin System of Steam Distribution has proved capable of increasing drawbar pull of a locomotive by as much as 33% at 70 mph and 44% at 80 mph — or, when this increased power is not being utilized, saving as much as 35% to 50% in fuel at these speeds.

It does this by making possible more efficient use of steam — by increasing the mean effective pressure in the cylinders. Separately controlled intake and exhaust poppet valves are substituted for the piston valve. With poppet valves, shorter cutoffs can be used

without adversely affecting release and compression. Also, clearance volume can be reduced, valves can be opened and closed faster, and steam flow areas can be enlarged. These improvements permit the use of a shorter cutoff for any given horsepower output.

To obtain the ultimate in performance, the application of the Franklin System is essential for new and existing locomotives, both freight and passenger.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1946—CONTINUED

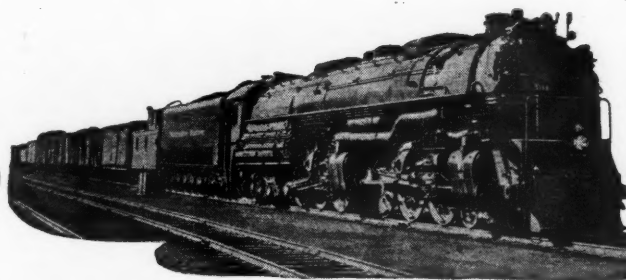
MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1946—CONTINUED													
Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Net railway operating income			
		Freight	Passenger	Total (inc. misc.)	Maintenance of way and structures	Equip-ment	Traffic			Trans- portation	Total	Railway tax accruals	1946	1945
Chicago, Milwaukee, St. Paul & Pacific	Dec. 10,733	\$13,254,001	\$2,046,800	\$15,299,801	\$2,269,455	\$2,821,539	\$344,660	\$7,514,620	\$13,794,462	\$3,244,184	\$1,618,000	\$1,301,980	\$907,692
Chicago, Milwaukee, St. Paul & Pacific	12 mos. 10,733	\$13,254,001	\$2,046,800	\$15,299,801	\$2,269,455	\$2,821,539	\$344,660	\$7,514,620	\$13,794,462	\$3,244,184	\$1,618,000	\$1,301,980	\$907,692
Chicago, Rock Island & Pacific	Dec. 7,650	\$10,719,898	\$2,103,715	\$12,823,613	\$1,661,897	\$2,240,985	\$365,057	\$5,419,400	\$10,366,118	\$3,066,284	\$1,891,885	\$1,331,882	\$861,225
Chicago, Rock Island & Pacific	12 mos. 7,652	\$11,706,372	\$2,076,826	\$13,783,198	\$1,661,897	\$2,240,985	\$365,057	\$5,419,400	\$10,366,118	\$3,066,284	\$1,891,885	\$1,331,882	\$861,225
Chicago, St. Paul, Minn. & Omaha	Dec. 1,616	\$1,912,981	\$272,186	\$2,185,167	\$233,741	\$359,035	\$49,139	\$1,215,568	\$1,954,443	\$443,417	\$177,067	\$51,769	\$200,587
Chicago, St. Paul, Minn. & Omaha	12 mos. 1,616	\$1,912,981	\$272,186	\$2,185,167	\$233,741	\$359,035	\$49,139	\$1,215,568	\$1,954,443	\$443,417	\$177,067	\$51,769	\$200,587
Clinchfield	Dec. 302	\$1,079,783	\$7,681	\$1,087,464	\$4,009,009	\$4,391,229	\$79,125	\$13,765,052	\$23,917,042	\$446,964	\$138,559	\$372,875	\$1,233,750
Clinchfield	12 mos. 302	\$1,079,783	\$7,681	\$1,087,464	\$4,009,009	\$4,391,229	\$79,125	\$13,765,052	\$23,917,042	\$446,964	\$138,559	\$372,875	\$1,233,750
Colorado & Southern	Dec. 748	\$744,655	\$168,888	\$913,543	\$196,175	\$193,961	\$22,917	\$433,071	\$904,610	\$124,815	\$73,712	\$5,729	\$78,750
Colorado & Southern	12 mos. 748	\$744,655	\$168,888	\$913,543	\$196,175	\$193,961	\$22,917	\$433,071	\$904,610	\$124,815	\$73,712	\$5,729	\$78,750
Ft. Worth & Denver City	Dec. 902	\$801,826	\$1,060,723	\$1,862,549	\$1,983,786	\$2,015,180	\$253,349	\$4,852,255	\$7,971,276	\$149,615	\$98,651	\$214,343	\$241,938
Ft. Worth & Denver City	12 mos. 902	\$826,054	\$1,060,723	\$1,886,777	\$2,498,873	\$2,498,873	\$380,062	\$4,514,446	\$10,104,138	\$192,363	\$664,148	\$862,095	\$1,189,002
Colorado & Wyoming	Dec. 42	\$82,743	\$135,629	\$218,372	\$4,259	\$6,548	\$795	\$57,790	\$74,371	\$61,258	\$36,817	\$24,271	\$20,545
Colorado & Wyoming	12 mos. 42	\$82,743	\$135,629	\$218,372	\$4,259	\$6,548	\$795	\$57,790	\$74,371	\$61,258	\$36,817	\$24,271	\$20,545
Columbus & Greenville	Dec. 168	\$121,415	\$3,483	\$124,898	\$135,073	\$23,114	\$5,611	\$85,444	\$176,655	\$43,411	\$29,046	\$14,354	\$10,815
Columbus & Greenville	12 mos. 168	\$150,839	\$3,483	\$154,322	\$36,127	\$25,107	\$5,197	\$682,300	\$1,566,741	\$113,865	\$110,773	\$4,116	\$33,008
Delaware & Hudson	Dec. 794	\$3,560,937	\$130,425	\$3,691,362	\$604,441	\$875,267	\$55,081	\$1,659,372	\$3,334,823	\$682,954	\$275,160	\$403,098	\$3,004,621
Delaware & Hudson	12 mos. 794	\$3,560,937	\$130,425	\$3,691,362	\$604,441	\$875,267	\$55,081	\$1,659,372	\$3,334,823	\$682,954	\$275,160	\$403,098	\$3,004,621
Delaware, Lackawanna & Western	Dec. 973	\$4,771,455	\$845,374	\$5,616,829	\$6,151,811	\$8,716,282	\$11,936,241	\$1,493,621	\$38,413,674	\$11,067,877	\$5,151,585	\$5,109,258	\$2,347,901
Delaware, Lackawanna & Western	12 mos. 973	\$4,771,455	\$845,374	\$5,616,829	\$6,151,811	\$8,716,282	\$11,936,241	\$1,493,621	\$38,413,674	\$11,067,877	\$5,151,585	\$5,109,258	\$2,347,901
Denver & Rio Grande Western	Dec. 2,366	\$3,380,401	\$306,960	\$3,687,361	\$3,886,945	\$513,782	\$631,516	\$140,659	\$1,606,592	\$570,809	\$2,393,742	\$2,923,179	\$460,554
Denver & Rio Grande Western	12 mos. 2,366	\$3,380,401	\$306,960	\$3,687,361	\$3,886,945	\$513,782	\$631,516	\$140,659	\$1,606,592	\$570,809	\$2,393,742	\$2,923,179	\$460,554
Denver & Salt Lake	Dec. 232	\$282,720	\$5,007	\$287,727	\$298,035	\$27,717	\$45,938	\$4,225	\$130,667	\$87,622	\$74,205	\$63,327	\$63,137
Denver & Salt Lake	12 mos. 232	\$282,720	\$5,007	\$287,727	\$298,035	\$27,717	\$45,938	\$4,225	\$130,667	\$87,622	\$74,205	\$63,327	\$63,137
Detroit & Mackinac	Dec. 230	\$123,327	\$1,655	\$124,982	\$38,894	\$39,164	\$1,253	\$40,257	\$134,669	\$2,910	\$49,637	\$62,801	\$19,880
Detroit & Mackinac	12 mos. 230	\$123,327	\$1,655	\$124,982	\$38,894	\$39,164	\$1,253	\$40,257	\$134,669	\$2,910	\$49,637	\$62,801	\$19,880
Detroit & Toledo Shore Line	Dec. 50	\$4,244,767	\$38,441	\$4,283,208	\$4,568,683	\$487,570	\$390,246	\$129,034	\$1,450,271	\$1,700,183	\$398,481	\$556,249	\$653,927
Detroit & Toledo Shore Line	12 mos. 50	\$4,244,767	\$38,441	\$4,283,208	\$4,568,683	\$487,570	\$390,246	\$129,034	\$1,450,271	\$1,700,183	\$398,481	\$556,249	\$653,927
Detroit, Toledo & Ironton	Dec. 464	\$828,663	\$1,123	\$829,786	\$869,640	\$112,978	\$148,592	\$20,123	\$270,010	\$585,689	\$83,011	\$175,821	\$39,385
Detroit, Toledo & Ironton	12 mos. 464	\$828,663	\$1,123	\$829,786	\$869,640	\$112,978	\$148,592	\$20,123	\$270,010	\$585,689	\$83,011	\$175,821	\$39,385
Duluth, Missabe & Iron Range	Dec. 547	\$280,913	\$2,166	\$283,079	\$321,224	\$369,259	\$482,452	\$6,626	\$9,993,906	\$18,976,379	\$5,927,803	\$8,688,469	\$15,200,192
Duluth, Missabe & Iron Range	12 mos. 546	\$287,732	\$48,243	\$335,975	\$4,632,442	\$4,690,511	\$72,491	\$8,993,906	\$18,976,379	\$5,927,803	\$8,688,469	\$15,200,192	\$15,200,192
Duluth, Winnipeg & Pacific	Dec. 175	\$289,765	\$1,699	\$291,464	\$300,680	\$61,371	\$49,398	\$3,956	\$1,420,814	\$265,830	\$139,450	\$229,954	\$41,787
Duluth, Winnipeg & Pacific	12 mos. 175	\$289,765	\$1,699	\$291,464	\$300,680	\$61,371	\$49,398	\$3,956	\$1,420,814	\$265,830	\$139,450	\$229,954	\$41,787
Elgin, Joliet & Eastern	Dec. 391	\$2,159,773	\$23,899	\$2,183,672	\$2,598,457	\$136,136	\$407,489	\$23,416	\$1,210,963	\$1,875,005	\$72,452	\$155,302	\$41,704
Elgin, Joliet & Eastern	12 mos. 391	\$2,159,773	\$23,899	\$2,183,672	\$2,598,457	\$136,136	\$407,489	\$23,416	\$1,210,963	\$1,875,005	\$72,452	\$155,302	\$41,704
Florida East Coast	Dec. 682	\$1,518,660	\$8,276,642	\$9,795,302	\$10,733,368	\$44,819	\$1,899,810	\$235,823	\$5,403,409	\$8,668,134	\$542,892	\$2,076,778	\$327,972
Florida East Coast	12 mos. 682	\$1,518,660	\$8,276,642	\$9,795,302	\$10,733,368	\$44,819	\$1,899,810	\$235,823	\$5,403,409	\$8,668,134	\$542,892	\$2,076,778	\$327,972
Georgia Railroad	Dec. 328	\$412,808	\$70,124	\$482,932	\$518,558	\$109,522	\$165,222	\$25,983	\$1,651,878	\$1,711,792	\$421,639	\$48,616	\$170,463
Georgia Railroad	12 mos. 328	\$412,808	\$70,124	\$482,932	\$518,558	\$109,522	\$165,222	\$25,983	\$1,651,878	\$1,711,792	\$421,639	\$48,616	\$170,463
Georgia & Florida	Dec. 408	\$2,270,499	\$39,095	\$2,309,594	\$2,376,742	\$664,730	\$334,340	\$969,561	\$2,208,221	\$157,701	\$140,209	\$30,834	\$170,463
Georgia & Florida	12 mos. 408	\$2,270,499	\$39,095	\$2,309,594	\$2,376,742	\$664,730	\$334,340	\$969,561	\$2,208,221	\$157,701	\$140,209	\$30,834	\$170,463
Grand Trunk Western	Dec. 972	\$3,084,870	\$229,104	\$3,313,974	\$434,734	\$454,972	\$58,974	\$1,699,619	\$3,747,072	\$767,148	\$214,392	\$402,501	\$170,463
Grand Trunk Western	12 mos. 972	\$3,084,870	\$229,104	\$3,313,974	\$434,734	\$454,972	\$58,974	\$1,699,619	\$3,747,072	\$767,148	\$214,392	\$402,501	\$170,463
Canadian Nat'l Lines in New England	Dec. 172	\$1,401,766	\$9,501	\$1,411,267	\$1,605,897	\$1,122,717	\$1,651,878	\$30,233	\$1,649,619	\$1,711,792	\$421,639	\$48,616	\$170,463
Canadian Nat'l Lines in New England	12 mos. 172	\$1,401,766	\$9,501	\$1,411,267	\$1,605,897	\$1,122,717	\$1,651,878	\$30,233	\$1,649,619	\$1,711,792	\$421,639	\$48,616	\$170,463
Great Northern	Dec. 8,332	\$1,071,916	\$1,053,669	\$2,125,585	\$2,172,363	\$2,172,363	\$2,418,039	\$332,620	\$3,441,538	\$1,457,069	\$3,406,133	\$28,379,435	\$28,379,435
Great Northern	12 mos. 8,332	\$1,071,916	\$1,053,669	\$2,125,585	\$2,172,363	\$2,172,363	\$2,418,039	\$332,620	\$3,441,538	\$1,457,069	\$3,406,133	\$28,379,435	\$28,379,435
Green Bay & Western	Dec. 234	\$2,634,039	\$4,919	\$2,638,958	\$2,701,590	\$600,835	\$877,157	\$137,135	\$1,020,286	\$37,610,639	\$10,968,773	\$25,015,267	\$32,014
Green Bay & Western	12 mos. 234	\$2,634,039	\$4,919	\$2,638,958	\$2,701,590	\$600,835	\$877,157	\$137,135	\$1,020,286	\$37,610,639	\$10,968,773	\$25,015,267	\$32,014

Table continued on next left-hand page.

5, 1947
 Great Northern Dec.
 Green Bay & Western 12 mos.
 8,332 11,071,916
 8,332 137,660,549
 234 208,259
 234 2,634,039
 4,919 2,701,590
 63 212,747
 15,985,382 167,368,485
 1,053,669 13,022,314
 1,072,363 2,418,039
 29,077,024 29,690,375
 87,534 17,748
 600,835 287,157
 2,195,553 137,135
 218,773 11,400
 78,971 137,135
 1,020,286 137,135
 2,195,553 137,135
 81.27 102.83
 17,120 102.83
 270,291 102.83
 131,208 102.83
 126,040 102.83
 28,329,432 102.83
 736,049 102.83

More Locomotive Mileage

**through
increased
availability**



• The installation of Security Circulators minimizes honeycombing, flue plugging and cinder cutting, so that, when circulator-equipped, an existing locomotive can operate for longer periods more efficiently.

The resulting gain in locomotive availability means that the cost of installing Security Circulators will rapidly be repaid through the increased earning power of the locomotive.

AMERICAN ARCH COMPANY, Inc.

NEW YORK • CHICAGO

SECURITY' CIRCULATOR DIVISION

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1946—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Net railway operating income		
		Freight	Passenger	Total (inc. misc.)	Way and structures	Maintenance of equipment	Traffic			Trans- portation	Total	Railway tax accruals	1946	1945
Gulf, Mobile & Ohio	Dec. 12 mos.	1,945 \$2,842,269	\$136,358	\$3,080,505	\$529,907	\$546,810	\$104,915	79.6	\$628,243	\$700,996	\$1,184,487	\$18,639
Illinois Central (System)	Dec. 12 mos.	1,945 31,967,304	1,781,978	34,933,043	6,773,765	6,458,997	1,260,916	82.1	6,265,616	1,739,231	2,710,615	2,762,860
	Dec. 12 mos.	6,582 15,029,336	2,713,558	19,034,606	2,311,762	3,220,498	3,221,187	73.8	4,987,909	2,295,799	2,513,945	807,190
	Dec. 12 mos.	6,593 165,360,742	31,389,842	211,117,845	36,487,780	36,476,892	3,908,129	79.7	42,888,683	22,558,597	17,889,905	23,906,043
Illinois Terminal	Dec. 12 mos.	476 644,404	148,461	871,526	104,581	112,024	23,908	70.0	261,700	114,112	124,156	1,128,183
Kansas City Southern	Dec. 12 mos.	476 6,889,797	1,727,604	9,569,260	1,374,134	1,314,987	287,862	74.6	2,420,006	1,084,816	1,034,968	2,249,817
	Dec. 12 mos.	890 21,118,635	1,134,005	22,457,874	72,281	343,616	77,898	58.0	1,031,676	405,000	463,440	1,292,228
	Dec. 12 mos.	890 251,174,706	2,516,882	30,043,047	2,929,874	4,091,545	841,176	64.8	10,564,740	3,595,000	5,340,735	7,421,883
Kansas, Oklahoma & Gulf	Dec. 12 mos.	328 395,685	1,611	402,979	34,856	19,118	16,378	38.9	246,330	80,409	133,625	54,778
Lake Superior & Ishpeming	Dec. 12 mos.	328 3,764,884	18,617	3,824,145	542,789	297,482	161,834	57.7	1,618,968	545,498	753,871	83,557
	Dec. 12 mos.	156 1,355,356	139	60,012	31,896	31,541	45,288	25.2	73,125	21,468	30,480	82,820
	Dec. 12 mos.	156 1,859,657	1,147	2,273,233	474,548	456,284	10,424	74.7	576,258	361,874	286,571	685,372
Lehigh & Hudson River	Dec. 12 mos.	96 241,113	.....	242,159	46,876	33,084	6,397	76.2	57,543	15,984	16,547	85,545
Lehigh & New England	Dec. 12 mos.	96 2,780,639	.....	2,787,226	501,913	408,873	75,308	73.5	736,553	291,223	233,649	152,856
	Dec. 12 mos.	193 6,068,356	.....	6,099,904	83,882	86,231	12,674	70.6	179,353	236,678	442,851	425,568
	Dec. 12 mos.	190 6,756,553	.....	6,823,124	808,887	1,145,799	121,126	68.7	2,132,395	666,546	1,591,373	417,279
Lehigh Valley	Dec. 12 mos.	1,254 4,802,361	448,752	5,645,941	748,481	871,663	133,542	83.6	926,990	*809,048	1,558,309	5,525,761
Louisiana & Arkansas	Dec. 12 mos.	1,254 56,251,456	6,115,492	67,007,686	9,114,483	9,961,745	1,543,653	82.3	11,864,451	3,666,354	6,347,973	586,119
	Dec. 12 mos.	756 1,065,083	50,023	1,177,604	120,423	135,962	41,975	62.1	446,584	135,482	236,822	262,599
	Dec. 12 mos.	756 11,901,063	1,023,930	13,455,624	1,686,965	1,719,845	447,325	65.5	4,639,346	1,633,844	2,202,145	2,618,796
Louisville & Nashville	Dec. 12 mos.	4,768 11,457,675	1,602,613	14,015,188	1,684,753	3,002,705	278,884	82.6	2,443,296	1,617,520	1,187,769	956,307
Maine Central	Dec. 12 mos.	988 1,351,086	204,562	1,677,854	249,014	337,894	16,134	82.0	302,802	136,301	126,755	68,998
	Dec. 12 mos.	988 16,720,460	2,674,812	20,615,298	3,485,915	3,812,604	189,691	81.9	3,736,808	1,520,660	1,492,637	1,514,833
Midland Valley	Dec. 12 mos.	334 137,768	12	139,075	26,361	13,841	3,416	78.9	29,406	14,200	14,157	25,743
Minneapolis & St. Louis	Dec. 12 mos.	334 1,639,168	323	1,667,786	379,979	188,869	151,945	77.2	380,753	142,787	144,988	277,196
	Dec. 12 mos.	1,408 1,278,203	17,461	1,342,406	85,072	171,784	80,731	68.1	428,677	205,577	171,995	266,553
	Dec. 12 mos.	1,408 13,624,064	319,410	14,570,115	2,810,353	2,456,281	1,037,205	87.4	1,831,089	1,058,004	443,938	593,451
Minneapolis, St. Paul & S. Marie	Dec. 12 mos.	3,224 1,990,052	114,161	2,253,568	389,341	468,546	50,178	93.2	154,066	220,328	110,813	93,172
Duluth, South Shore & Atlantic	Dec. 12 mos.	3,224 24,543,962	1,745,284	28,266,905	5,068,830	4,874,999	574,007	88.0	3,380,898	2,066,068	1,016,668	2,804,235
	Dec. 12 mos.	530 302,844	11,961	337,439	51,405	72,912	16,037	92.7	34,700	13,665	10,186	70,705
	Dec. 12 mos.	530 3,718,993	179,470	4,200,928	882,770	784,362	166,581	91.3	367,346	246,042	10,775	41,941
Spokane International	Dec. 12 mos.	152 141,013	2,846	152,557	27,806	8,073	3,521	63.6	55,538	7,582	37,754	17,849
Mississippi Central	Dec. 12 mos.	152 1,482,704	31,970	1,613,123	325,499	197,330	39,352	74.9	405,040	81,116	214,401	254,397
	Dec. 12 mos.	148 1,381,138	116	1,411,079	73,361	20,404	10,359	46.0	76,116	10,273	52,429	1,119
	Dec. 12 mos.	153 1,392,154	32,739	1,465,210	303,496	204,831	114,275	76.9	338,064	90,877	109,322	210,579
Missouri & Arkansas	Dec. 12 mos.	365 *3,028	365	2,810	8,771	5,111	1,242	99.4	23,736	1,252	24,152	18,816
Missouri-Illinois	Dec. 12 mos.	365 1,168,760	18,316	1,266,421	207,492	207,492	70,874	56.5	126,510	58,635	194,938	351,609
	Dec. 12 mos.	172 286,768	455	290,543	27,559	5,785	78,740	56.5	126,510	54,122	62,095	59,552
	Dec. 12 mos.	172 3,456,597	5,366	3,491,050	595,090	402,747	59,826	61.9	1,330,898	585,541	629,478	447,249
Missouri-Kansas-Texas Lines	Dec. 12 mos.	3,253 4,365,081	454,620	5,333,846	796,065	689,898	191,865	76.5	1,256,014	508,863	481,241	2,358,928
Missouri Pacific	Dec. 12 mos.	3,253 12,784,467	742,012	60,732,982	10,336,018	8,634,114	2,307,944	80.0	12,131,360	5,031,048	4,398,339	8,782,443
	Dec. 12 mos.	7,037 12,612,924	1,736,385	15,698,533	2,489,427	2,596,696	335,181	78.2	3,415,981	767,610	2,117,332	4,321,105
	Dec. 12 mos.	7,069 137,825,969	21,578,521	174,495,869	26,479,577	31,045,743	4,139,545	78.9	36,752,500	10,047,990	19,803,712	23,659,328
Gulf Coast Lines	Dec. 12 mos.	1,734 2,658,462	93,255	2,932,061	493,422	368,114	69,617	72.67	801,419	108,224	380,982	849,769
International-Great Northern	Dec. 12 mos.	1,734 33,164,325	2,662,539	36,908,802	6,782,237	4,322,004	799,462	68.87	11,490,915	2,477,989	5,956,787	4,021,098
	Dec. 12 mos.	1,110 1,838,660	2,394,646	3,325,101	399,300	399,300	43,633	86.5	324,100	100,221	1,976	130,836
	Dec. 12 mos.	1,110 20,119,266	3,812,748	26,869,272	5,408,925	4,343,165	513,154	86.8	3,550,819	1,245,214	281,482	3,058,233
Monongahela	Dec. 12 mos.	170 479,130	1,385	486,308	79,771	55,485	949	55.4	216,858	59,979	73,277	103,830
	Dec. 12 mos.	170 5,921,719	22,811	5,983,392	380,613	615,924	10,436	55.2	2,683,385	718,769	936,808	1,082,217

Table continued on next left-hand page.

Railway Age—February 15, 1947

**MAXIMUM
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February 15, 1947

Monongahela Dec. 12 mos. 170 479,130 1,385 486,308 39,771 55,485 949 169,127 269,440 55.4 216,858 73,277 103,830
170 5,921,719 22,811 5,983,392 780,613 615,924 10,436 1,841,380 3,299,927 55.2 2,683,385 718,709 936,808 1,082,217

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1946—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from operation	Net railway operating income	
		Freight	Passenger	Total (inc. misc.)	Way and structures	Maintenance of equipment	Traffic			Railway tax accruals	1946
Montour	51	175,666	17,776	193,442	15,135	57,386	\$1,042	92.8	\$12,685	\$28,710	\$31,228
Nashville, Chattanooga & St. Louis	51	2,595,975	2,610,726	5,206,701	268,468	758,133	15,056	81.1	492,175	445,288	479,338
	1,052	2,028,144	\$233,903	2,262,047	519,761	959,301	1,161,645	106.9	1,161,645	*1,119,175	931,356
	1,053	22,823,138	3,736,711	26,559,849	6,441,621	6,250,129	13,204,461	96.9	903,868	*672,282	1,495,112
New York Central	10,743	32,691,409	13,886,890	46,578,299	9,907,727	13,690,583	898,927	106.4	3,291,031	*5,822,080	132,934
	10,746	409,199,356	148,109,502	557,308,858	92,676,937	132,566,900	10,456,569	90.5	58,433,262	23,953,407	15,447,219
	223	2,051,078	98,424	2,149,502	782,725	904,327	649,573	128.0	630,991	379,167	272,224
	228	25,644,190	1,143,172	26,787,362	4,658,444	9,777,734	12,074,510	103.9	1,096,495	2,589,672	3,270,806
New York, Chicago & St. Louis	1,687	6,216,373	154,686	6,371,059	1,194,646	1,050,591	145,500	84.1	1,040,428	64,586	560,018
	1,687	70,076,688	2,556,538	72,633,226	10,417,040	12,648,789	2,066,973	78.7	15,826,873	3,579,616	8,426,302
	1,838	6,851,187	4,245,333	11,096,520	1,984,859	2,031,883	293,478	90.5	1,164,593	422,382	191,708
	1,841	76,811,081	60,192,021	136,999,102	23,955,226	23,197,961	67,665,065	85.9	21,031,694	6,920,482	958,326
New York Connecting	21	174,436	186,031	360,467	62,707	17,991	88,184	92.0	14,831	17,490	76,089
	21	2,104,584	2,157,560	4,262,144	691,489	183,539	734,335	75.9	520,892	574,094	1,031,126
	547	530,532	2,232	532,764	157,451	110,656	328,601	110.3	60,352	38,941	181,910
	547	6,370,299	162,264	6,532,563	1,452,502	1,374,236	298,405	103.1	226,270	497,217	1,672,747
New York, Susquehanna & Western	120	312,830	41,124	353,954	69,177	68,435	158,259	158.0	212,289	*116,231	135,835
	120	3,480,665	483,503	3,964,168	510,982	513,257	1,907,734	84.0	660,574	154,850	90,745
	2,130	2,166,822	10,562,933	12,729,755	1,376,220	1,313,277	3,686,799	74.3	2,689,594	2,248,766	1,241,990
	2,135	115,140,073	10,560,913	125,700,986	17,775,633	26,379,549	2,301,123	71.2	37,380,128	25,066,004	12,952,677
Norfolk & Western	727	619,111	5,202	624,313	108,334	79,455	272,120	83.5	106,228	38,804	28,157
	727	7,514,170	136,240	7,650,410	1,900,148	990,290	3,154,691	90.3	993,831	492,627	494,336
	6,921	9,065,261	868,076	9,933,337	1,709,613	2,423,366	5,267,107	87.4	1,063,977	449,460	1,060,963
	6,892	100,882,953	14,169,131	115,052,084	21,339,899	24,646,550	2,608,818	83.5	20,949,419	12,323,408	13,351,894
Norfolk Southern	331	470,227	11,879	482,106	163,573	75,019	243,378	101.1	5,071,990	32,360	72,752
	331	4,765,202	100,093	4,865,295	1,771,808	799,240	2,619,920	104.6	23,784,007	359,017	892,539
	132	80,914	2,356	83,270	20,364	1,356	21,604	59.2	33,517	410	22,451
	132	897,039	28	897,067	252,096	39,750	284,670	69.1	285,098	83,670	65,172
Oklahoma City-Ada-Atoka	10,113	45,725,058	15,313,216	61,038,274	6,737,003	14,215,643	1,244,539	92.4	5,071,990	3,637,324	717,747
	10,120	531,286,168	207,033,702	738,320,870	100,774,332	188,738,078	15,487,226	97.7	76,331,185	43,196,863	25,917,224
	376	1,138,939	2,218,836	3,357,775	494,171	509,344	2,045,938	88.0	428,556	427,714	352,158
	376	14,001,238	29,665,231	43,666,469	5,236,480	6,797,048	367,169	79.3	9,482,576	5,149,581	633,216
Pennsylvania	10,113	45,725,058	15,313,216	61,038,274	6,737,003	14,215,643	1,244,539	92.4	5,071,990	3,637,324	717,747
	10,120	531,286,168	207,033,702	738,320,870	100,774,332	188,738,078	15,487,226	97.7	76,331,185	43,196,863	25,917,224
	376	1,138,939	2,218,836	3,357,775	494,171	509,344	2,045,938	88.0	428,556	427,714	352,158
	376	14,001,238	29,665,231	43,666,469	5,236,480	6,797,048	367,169	79.3	9,482,576	5,149,581	633,216
Pennsylvania-Reading Seashore Lines	Dec.	1,950	4,144,315	198,424	645,467	861,420	91,316	86.7	608,833	339,294	200,221
	Dec.	1,950	45,060,317	2,530,047	50,686,344	7,533,383	1,235,694	85.8	7,174,092	3,305,286	2,236,686
Pere Marquette	97	163,922	165,020	328,942	12,687	22,064	49,634	56.9	71,148	5,659	61,081
	97	1,711,868	1,722,115	3,433,983	392,775	301,679	544,413	78.2	375,650	61,663	247,844
	136	385,868	403,697	789,565	141,897	109,997	140,063	121.7	87,486	*30,201	31,722
	136	4,507,476	78	4,507,554	993,121	1,133,639	350,139	91.6	400,132	295,519	428,693
Pittsburgh & Shawmut	Dec.	122	61,881	63,001	12,450	12,010	24,067	88.6	7,153	2,700	3,240
	Dec.	122	792,832	808,950	18,004	15,690	360,057	99.3	5,560	60,098	156,846
	137	7,654,747	756,485	8,411,232	1,234,316	1,522,475	3,856,908	78.6	1,905,826	328,400	1,422,905
	1,361	86,508,185	9,655,266	96,163,451	15,800,189	20,188,576	4,311,145	82.3	17,913,574	9,065,626	8,331,279
Pittsburgh, Shawmut & Northern	Dec.	118	1,139,193	1,008,696	316,094	265,882	16,930	67.7	772,801	361,722	323,103
	118	13,995,868	10,072,289	24,068,157	3,378,709	3,492,687	201,931	70.0	7,818,071	3,702,921	2,919,379
	407	302,793	41,594	344,387	58,327	83,354	237,528	95.9	17,312	38,397	43,314
	407	3,698,813	583,217	4,282,030	788,904	993,878	2,795,311	96.0	206,303	331,384	277,404
Richmond, Fredericksburg & Potomac	Dec.	4,645	6,367,160	7,869,581	1,015,686	1,623,616	3,506,413	84.7	1,205,340	*7,417,537	8,727,805
	4,645	71,286,593	12,713,860	84,000,453	19,734,263	19,734,263	39,464,465	88.1	10,944,013	*1,564,384	13,994,662
	160	3,102,173	249,158	3,351,331	544,390	588,528	1,661,888	83.6	575,443	154,707	100,544
St. Louis-San Francisco	Dec.	122	61,881	63,001	12,450	12,010	24,067	88.6	7,153	2,700	3,240
	122	792,832	808,950	18,004	15,690	15,690	360,057	99.3	5,560	60,098	156,846
	137	7,654,747	756,485	8,411,232	1,234,316	1,522,475	3,856,908	78.6	1,905,826	328,400	1,422,905
	1,361	86,508,185	9,655,266	96,163,451	15,800,189	20,188,576	4,311,145	82.3	17,913,574	9,065,626	8,331,279
St. Louis, San Francisco & Texas	Dec.	4,645	6,367,160	7,869,581	1,015,686	1,623,616	3,506,413	84.7	1,205,340	*7,417,537	8,727,805
	4,645	71,286,593	12,713,860	84,000,453	19,734,263	19,734,263	39,464,465	88.1	10,944,013	*1,564,384	13,994,662
	160	3,102,173	249,158	3,351,331	544,390	588,528	1,661,888	83.6	575,443	154,707	100,544

St. Louis San Francisco	6,367,160	750,019	7,869,581	1,035,696	162,316	196,791	3,506,413	35,064,240	84.7	1,205,340	*7,417,537	8,727,805
Dec.	4,645	12,764,826	911,351	14,355,209	38,597	23,791,263	39,904,184	80,973,306	88.1	10,943,013	*1,564,384	13,934,662
St. Louis San Francisco	6,367,160	750,019	7,869,581	1,035,696	162,316	196,791	3,506,413	35,064,240	84.7	1,205,340	*7,417,537	8,727,805
Dec.	4,645	12,764,826	911,351	14,355,209	38,597	23,791,263	39,904,184	80,973,306	88.1	10,943,013	*1,564,384	13,934,662
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
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Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
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Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
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Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
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St. Louis, San Francisco & Texas	1,632,173	349,540	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7	55,643	9,591	16,013
Dec.	1,660	3,632,173	3,504,540	554,350	458,528	160,508	1,444,055	2,650,969	82.7			



ELECTRO-MOTIVE DIVISION

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1946—CONTINUED

[illegible]

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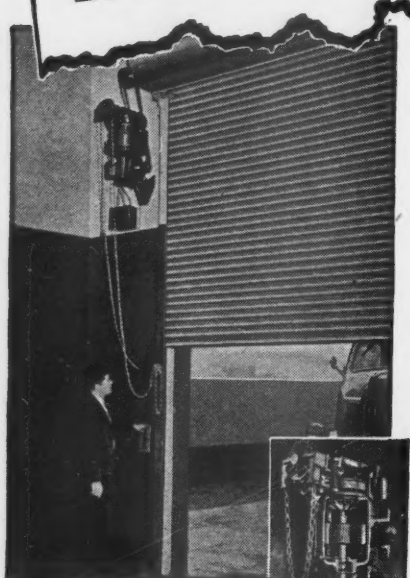
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Current Publications

PAMPHLETS

Youngstown Offers Industry Opportunity; An Interpretation of Basic Economic Factors Which Attract and Support Local Industry, by Herbert S. Swan. 96 pages, illustrations. Published by the New Industries Committee, the Greater Youngstown Area Foundation, 125 W. Commerce st., Youngstown, Ohio. Free.

This booklet explains why Youngstown wants more industries and the advantages of locating there. A large portion of the booklet is devoted to transportation, and includes discussion of Youngstown as a railroad center, character of local rail service, switching services, rates, marketing areas, etc. Other subjects discussed are the steel industry, labor, water facilities, fuel and power, climate, taxation, advantages of Youngstown to steel fabricators, and products manufactured in Youngstown.

Applications of Electricity to Railways, 1942-1945; prepared by Edmund A. Freeman, assisted by Douglas R. Stephenson. 87 pages. Published by the Bureau of Railway Economics Library, Association of American Railroads, Transportation Building, Washington 6, D. C. Free.

This bibliography of periodical articles appearing in a select list of periodicals is being published for the first time since 1941. It is divided into three parts, i.e., railroad electrification, locomotives (Diesel-electric and electric), and electrical apparatus and equipment. Foreign and domestic periodicals numbering 35 are included in the entries, and all are keyed to indicate in what libraries they are available. An appendix contains lists of books and periodicals contributed by the Signal section and the Communications section of the Association of American Railroads.

The Pioneer Period of European Railroads; a tribute to Mr. Thomas W. Streeter. 71 pages. Published by the Baker Library, Harvard Graduate School of Business Administration, Boston, Mass. Price 50 cents.

Mr. Streeter has presented to the Baker Library all the material on non-American railroads that he has collected over a considerable period of years. The material relates to the pioneer stage of railroad development and covers the period from before 1800 through 1848. To signalize this gift the Baker Library has issued this pamphlet listing all of the material, as well as other material of a corresponding nature already in the possession of the Baker Library or any other Harvard library. As an introduction to the listings, Professor Arthur L. Dunham of the University of Michigan has written an essay entitled "The Pioneer Period of Railroads in England, France and the United States" in which he discusses the influence of geography on the development of early railroads in these countries, volume and density of traffic, financing, the supply of labor and the supply of rails in relation to the development of the domestic iron industry. He suggests the need for more research and more facts concerning the development and building of early railroads and concluded as follows: "Let us see the railroad as more

than a matter of metallurgy, finance, or statistics; let us view it as a tremendous force putting the powers of nature at the service of both war and civilization."

Railways of Cuba, by George C. Howard. 15 pages. Issued by the Office of International Trade, United States Department of Commerce. Available from the Government Printing Office, Washington 25, D. C. Price five cents.

After a short introduction in which he discusses topography and climate, foreign trade, and population and economy, the author proceeds to discuss the railways of Cuba in detail. He lists the railroads together with their addresses and names of their chief officials, and gives statistics on their rolling stock and traffic. A survey of sugar-mill railroads in Cuba is contained in an appendix. A map of the principal railroads is also included.

Railroads. 88 pages, illustrations, charts. Published by Merrill Lynch, Pierce, Fenner & Beane, 70 Pine St., New York 5, N. Y. Free.

This brochure attempts to give an overall picture of the railroad situation at the present time, lists the efficiency factors of 30 leading railroads, and then proceeds to discuss the financial conditions of each of them. It concluded with a list of definitions of railroad and security terms.

BOOKS

Analysis of Railroad Operations, by Joseph L. White. Second edition, 306 pages, illustrations, charts, tables. Published by the Simmons-Boardman Publishing Corporation, 30 Church st., New York 7. Price, \$5.

This book offers the railroad officer or analyst of railroad operations a sound interpretation of the accounting classifications established for the railroads by the Interstate Commerce Commission. After an introduction to the general principles of railroad accounting, the author devotes separate chapters to the various accounts. He includes also an analysis of actual operations of two Class I railways in 1941, a reprint of an article by William J. Cunningham entitled "The Accomplishments of the United States Railroad Administration in Unifying and Standardizing the Statistics of Operation," and a pictorial summary of the principal sources of railway revenues and the causes of expenses as recorded in the accounts.

Transport Facilities, Services and Policies, by Emory R. Johnson. 409 pages. Published by D. Appleton-Century Company, 35 W. 32nd st., New York 1. Price, \$3.50.

"The purpose of this book is to present in a volume of moderate size an account of the facilities used and the services rendered by the several transportation agencies. The policies followed by the carriers and the government concerning the development, the interrelations, and the services of the five modes of transportation are discussed." The five modes of transportation covered are railroad and electric railway, pipe line, highway, inland waterways and ocean vessels, and air transportation.